THE SUGAR MANUFACTURERS' ASSOCIATION
(of Jamaica)
LIMITED

ANNUAL REPORT

OF THE

RESEARCH DEPARTMENT

1956

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COMMONWEALTH MYCOLOGICAL INSTITUTE
26 FEB 1964

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THE SUGAR MANUFACTURERS' ASSOCIATION (of Jamaica) LIMITED

RESEARCH DEPARTMENT

ANNUAL REPORT, 1956

A. INTRODUCTION AND SUMMARY

1. Messrs. T. Chinloy (Statistician), H. M. Thompson (Chemist) and I. R. Cowan (Agronomist, Physics) spent their overseas leave in the United Kingdom, during which they visited agricultural research centres.

2. Mr. I. R. Cowan presented a thesis on "Natural Evaporation under Tropical Conditions," and was granted the M.Sc. degree at the University of London.

3. Mr. R. J. Stephens, Agronomist in charge of the Eastern Division, transferred to Sevens Ltd., as from the end of June to take up the post of Agriculturalist.

Mr. N. A. Dixon, Junior Field Assistant, and Miss Monica Nation, statistical computor, resigned; the latter was succeeded by Miss Nesta Grant.

Mr. P. L. Carrington, Field Assistant, took up an appointment with The West Indies Sugar Company at Frome and was succeeded by Mr. O. G. Muschette.

4. In May, the Director attended meetings of the Advisory Committee of the B.W.I. Sugar Research Scheme in Trinidad, at which the future of the Scheme was discussed with Sir Charles Dodds, Chairman of the Colonial Products Council.

5. Dr. L. F. Wiggins and Mr. N. O. Schmidt of the B.W.I. Sugar Research Scheme, Trinidad, spent a week in Jamaica touring sugar factories and discussing technological research policy.

6. Dr. H. Greene, Adviser in Tropical Soils, Rothamsted, visited the Department and saw typical sugar cane soil types and their main problems of management.

7. Mr. G. C. Stevenson, Senior Geneticist of the B.W.I. Central Sugar Cane Breeding Station, visited the Department in January to see seedling raising and testing procedures as carried out in Jamaica and to discuss breeding lines to cater for resistance to Chlorotic Streak and *Helminthosporium* (Eye Spot).

8. Mr. K. S. Subba Rao of the Cane Breeding Institute at Coimbatore spent two weeks at the Department discussing seedling selection procedures, and visiting field experiments.

9. Two field research officers of the Colonial Sugar Refining Company of Australia, viz. Messrs. N. H. Monteith and R. H. Farquhar, visited the Department to study our research programme, as also did Mr. T. O. Ellis, Officer in charge of Agricultural Investigations at Central Romana, Dominican Republic.

10. Two successful J.A.S.T. Field Days were organized—one at Frome during spring land preparation operations, and another at Caymanas in May to study particularly, land reclamation methods.

11. Factory Days were organized for the J.A.S.T. at Caymanas on 24th April and at Vale Royal on 23rd May, 1956.

12. The Sectional Meetings of the Annual J.A.S.T. Conference were held at the Research Station in Mandeville on 26th and 27th November, 1956, at which the following papers were read by members of the Department:—

"Evaluation of Aqueous Ammonia as a Source of Nitrogen for Sugar Cane in Jamaica," by R. F. Innes, T. Chinloy and H. M. Thompson.

"Review of the Variety Situation in Jamaica," by C. E. M. Smith.

"Some Further Considerations on the Diagnosis of Sugar Cane Nutritional Deficiencies under Jamaica Conditions," by R. F. Innes, H. M. Thompson and G. M. Wightman (of Worthy Park Ltd.).

13. A total of 3,219,977 tons cane were ground, of which 3,205,919 tons were used to manufacture the equivalent of 361,876 tons of 96° sugar at 8·86 tons cane per ton 96° sugar. Of this, estates produced 2,010,567 tons cane, or 62·4% of the island total at an average production level of 33·0 tons cane per acre on 61,089 acres. Neither estates' acreage reaped nor tons cane per acre reached the record figures of 1955.

14. The Cane Yield Survey for sugar estates was continued. Yet again, productivity rate increased and reached the new record of 6·54 cwt. sugar per acre per month (calculated at a B.H.E. of 100 and a reduced pol extraction of 97%). Worthy Park again topped estates' performance by producing at 8·65 cwt. sugar per acre per month (the same as in 1955), whilst United Estates joined Monymusk, Sevens and Caymanas in producing at rates greater than 7 cwt. sugar per acre per month; six estates only produced at less than 6·0 cwt. sugar per acre per month. Appleton and Frome each improved by the very appreciable margin of 0·80 cwt. sugar per acre per month over their 1955 figures.

15. Over 50% of estates' area in cane is now devoted to the newer B4362, B41227 and B42231 varieties, of which the two principal, viz. B4362 and B41227 each

produced at over 7·0 cwt. sugar per acre per month when averaged over *all* estates—a very commendable industrial performance.

16. Two hundred and forty-two field experiments were in operation, in addition to which 140 fields were maintained under a crop log system.

17. Long term analysis of rainfall records has been commenced.

18. Fundamental studies on evaporation and transpiration were brought to a close during the year. The derivation of evaporation and evapotranspiration from meterological data has been shown to be possible with great accuracy. Growth rate has been related to "accumulated deficit," and the concept of irrigation control by "moisture budgeting" demonstrated effectively on an estate scale.

19. Plant cane results showed that there are no special merits in overhead irrigation compared with surface irrigation, other than water conservation. This work continues.

20. Work on the surface distribution of irrigation water has been continued and is being extended.

21. The general level of fertilizers applied on estates has been maintained, control fertilizer experiments have been continued and a leaf composition advisory service operated.

22. A new index of cane nutrition has been examined and data so far analysed, suggest that it may be superior to cane leaf analysis.

23. Further field studies with aqueous ammonia were concluded and the inferior performance of this source of nitrogen relative to equivalent amounts of sulphate of ammonia, confirmed.

24. An extensive field investigation into the value of split N applications, especially the late application of extra nitrogen, was initiated, whilst more evidence was obtained from Richmond-Llandovery that late applications of nitrogen applied by overhead irrigation were worth while and that urea and sulphate of ammonia so used, were equally effective.

25. The keeping of detailed information of the seasonal variation in composition and rate of growth of sugar cane on fields with records of outstanding performance, was undertaken. The results should be of value in helping to push up the field performance of sugar estates.

26. Field studies on the relative efficacy of sulphate of ammonia and urea were commenced.

27. Land preparation methods have been examined. The work continues. The data being accumulated are conflicting and it is too early to draw any general conclusions.

28. Liming practices are under investigation and here also the data forthcoming are conflicting, so that no general pronouncement is warranted at present.

29. The value of inter-row cultivation is seriously in doubt, except where tilth has been destroyed by transport operations during a wet harvest.

30. The turning of trash, except in a wet year, is of doubtful economic value, but for some varieties, "booting" cane is beneficial.

31. The results of cane row spacing as well as population density studies are discussed.

32. Studies have been commenced into the effects of infield transport vehicles upon cane yields, and studies on systems of infield drainage will be continued.

33. An analysis of estates' variety planting, reaping and yield performance is discussed. The necessity for obtaining Chlorotic Streak and *Helminthosporium* resistance is stressed, and the system of variety testing is being designed to help achieve this.

34. The results of the variety testing programme are presented. It is doubtful if varieties of outstanding performance compared with B41227 and B4362 will be early available although there will be a number of varieties of similar performance.

35. The foreign varieties proved disappointing—especially the Australian varieties which took mosaic, and the Mauritius varieties. NCo310 now appears to be of doubtful value because of its unreliable ratoon performance. H37/1933 is a competitive variety under irrigation but takes mosaic. NCo330 requires further observation.

36. Long term variety experiments (i.e. nearly 24 months growth) were operated, but no results became available. Also the "standing over" of cane from one crop to the next was the subject of investigations which are being continued.

37. Hot water treatment has been shown to be well worth while for susceptible varieties in Chlorotic Streak areas.

38. The West Indian Cane Fly has been shown to have developed resistance to D.D.T., but to be susceptible to Endrin and Malathion.

39. Nematodes may be responsible for a serious loss in yield of sugar cane in isolated instances. Fumigation with D.D. resulted in very pronounced growth increases.

40. Factory reports were circularized during the year. An analysis of factory performance over the last ten years shows an increase in milling rate, which has almost kept pace with increased cane supplies; an increased extraction and an improved boiling house efficiency in spite of an increase in the polarization of the sugar produced.

B. PRODUCTION

The 1956 production fell short of the 1955 figure by nearly 40,000 tons of 96° sugar, due to a drop of over 12·5% in farmers' deliveries and nearly 8% in estates'. The drop in farmers' cane is attributed to a lack of interest in maintaining cultivation standards consequent upon the threatened reduction in production as a result of the prospects of the industry having heavy supplies of unsold sugar, and to many cultivators joining in the migration to the United Kingdom. Estates' decreased production was brought about as a result of a deliberate policy to reduce production, to

a 3% reduction in acreage reaped and to about an 8% decrease in growing period.

In contrast to the reduced production, estates' rate of sugar per acre per month was the highest ever; the actual figure of 6·54 cwt. sugar per acre per month being an increase of 2% over the previous year's record productivity rate. This good performance was achieved in spite of the continued extension of bananas on to some of the best cane land, the relatively poor growing season and the appreciable reduction in growth period. Worthy Park, Caymanas and Sevens produced sugar at well over 7·0 cwt. sugar per acre per month, whilst Monymusk, United Estates and Frome approached this figure.

The recent trends in rate of sugar production for estates are given in Figure 1:—

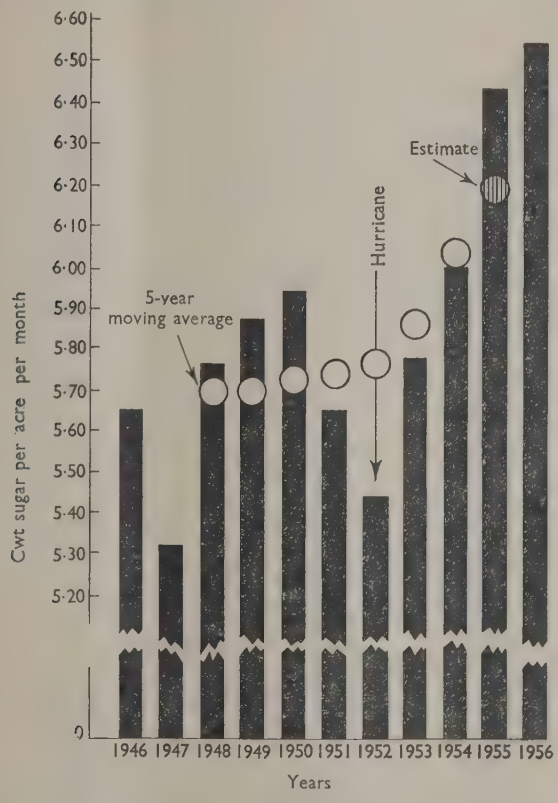

FIGURE 1

Cwt. sugar per acre per month for 1946–56 and five-year moving averages

The fluctuations over the last ten years have been induced by strikes and weather, but on the whole, progress has been maintained, and in the last few years at an increased pace. To understand the background against which this has been achieved, one should remember that it has coincided with an expansion in area of approximately 100% and that this expansion took place on to poorer lands in most instances. Furthermore, the relative importance of plants and ratoons has shifted over the period, very much in favour of longer ratooning. Of the cane reaped in 1956, one-quarter the area was in 4th ratoons or older, whilst the area reaped from plants was only one-seventh the total area reaped. By comparison, the 1949 and 1950 crops averaged 28·5% of the cropped area as plants and only 13% of the area reaped as 4th ratoons or older. The mean cycle age of the 1946 crop was 2·5 (plants = 1, 1st ratoons = 2, etc.) as against > 3·2 for 1956. In other words, there has been a very pronounced improvement in ratooning—the most important factor affecting production costs.

At the same time an appreciable increase in total sugar production per unit area of land devoted to cane culture has been brought about as a result of eliminating "dead time" consequent upon changing from "fall" plants to "spring" plants. Thus, compared with 1946, the area in fall plants has been decreased by more than 50%, which means that nearly 5% more of the land devoted to cane culture is now reaped annually. This change has been particularly noticeable at Frome and Gray's Inn and to a lesser degree at Appleton, United Estates, Monymusk and Holland. The benefit will not be reflected in rate of sugar production per acre nor in tons sugar per acre.

A more detailed study of the improved productivity of estates over the years shows that the greatest advances have been made in those areas where extreme potash deficiencies have been corrected, e.g. the rate at which sugar is produced per acre improved by 39% at Vale Royal, 35% at Long Pond, 33% at Worthy Park, 27% at United Estates, 18% at Barnett and Appleton, 16% at Richmond-Llandovery and 12% at Sevens, whilst least apparent advances were made by estates increasing their area in cane at the expense of expansion on to saline soils or soils of difficult structural properties. The overall picture has of course, only been made possible by the substitution of the newer B varieties for the older B34104, B37161 and B3439.

The current limits of productivity

When gauging the attainable upper limits of economic productivity it is of interest to analyse the performance and distribution of apparent freak fields. Ten cwt. sugar per acre per month means an annual production per acre of six tons sugar. The number of fields on sugar estates which produced at this level or better is indicated in Table I.

It is clear that very heavy yielding fields are well distributed throughout the industry on all but the driest estates and that, in special circumstances, yields of up to 10·8 tons sugar per acre per annum are possible. The reasons why such high yielding fields exist are of the greatest importance, and are the subject of a special investigation which was commenced during the year and to which further reference is made in this report see page 17).

At the other extreme, a sprinkling of very poor fields persists (also see Table I), many of which, but by no means all, are related to low rainfalls.

TABLE I

THE DISTRIBUTION OF FIELDS OF ABNORMAL RATES OF SUGAR PRODUCTION

Estates	Best Fields: Maximum field productivity rate	Best Fields: No. of fields producing at cwt. sugar/acre/month of 10–11	11–12	12–13	>13	Best Fields: % area reaped producing at >10 cwt. sugar/acre/month	Poorest Fields: No. of fields producing at cwt. sugar/acre/month of 4–3	3–2	<2	Poorest Fields: % area reaped producing at <4 cwt. sugar/acre/month
Worthy Park	11·8	28	9	—	—	20·2	—	—	—	—
United Estates	—	9	2	—	—	5·5	5	1	—	1·0
Sevens	12·9	3	1	2	—	4·0	2	—	—	0·6
Monymusk	18·0	31	5	6	2	3·3	20	5	2	2·1
Bernard Lodge	12·9	5	2	3	—	1·9	10	6	1	2·4
Caymanas	11·3	4	2	—	—	1·6	4	—	—	0·9
Frome	12·4	23	4	1	—	1·6	14	5	—	3·2
New Yarmouth	16·1	3	—	—	3	1·3	17	—	—	5·1
Appleton	11·2	2	1	—	—	1·1	7	—	—	2·7
Holland	13·3	1	1	—	1	0·9	23	16	1	39·0
Barnett	12·4	1	—	1	—	0·6	4	—	—	1·6
Innswood	12·9	—	—	1	—	0·3	3	1	—	3·9
Rose Hall	10·1	1	—	—	—	0·3	41	8	1	22·8
Gray's Inn	16·6	—	—	—	1	0·1	19	2	—	12·6
Jamaica Sugar Estates	10·0	1	—	—	—	—	5	2	2	2·9
Serge Island	12·4	1	—	—	—	0·1	14	1	—	11·5
Vale Royal	9·4	—	—	—	—	—	10	—	—	1·6
Long Pond	9·9	—	—	—	—	—	41	16	3	16·3
Hampden	8·5	—	—	—	—	—	75	25	3	38·0
Richmond-Llandovery	8·7	—	—	—	—	—	5	3	—	4·1
Totals		111	27	14	7		319	83	13	

Pol % Cane

The factory figures for pol % cane have been analysed to determine the mean seasonal trends in cane quality in the main ecological areas. The last ten crops were divided into two five-year periods because of the pronounced variety change which came about from 1951 onwards. The mean relationships for some factories typical of the main ecological areas are given in Figure 2.

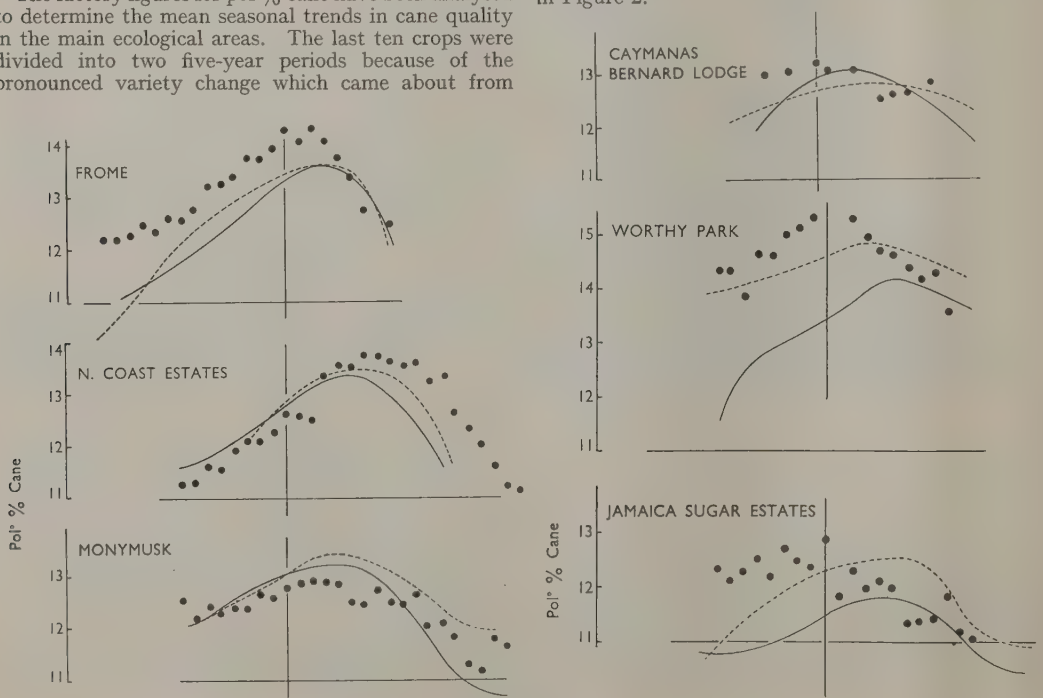

FIGURE 2

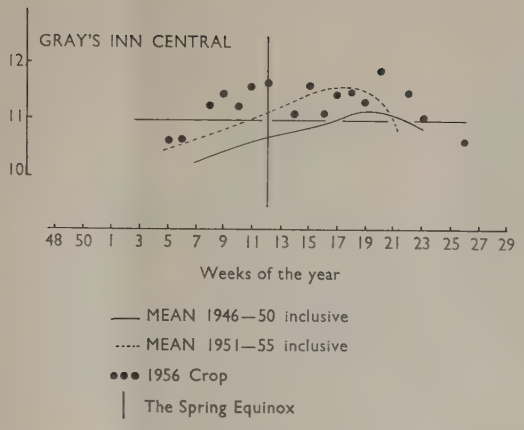

FIGURE 2—*continued*

It is often claimed in some quarters that a price is being paid for variety changes, in the quality of cane milled. The graphs show that there is no cause to believe that the variety changes of the last ten years have affected cane quality (as measured by pol % cane) adversely. The outstanding influence of varieties is seen at Worthy Park, where the change subsequent to 1950 was the fastest of all estates. The Worthy Park curves also show how, by combining the early reaping of B4362 with the later reaping of B41227, an appreciable levelling off of the cane quality curve can be attained.

In Table II are given some mean data obtained from an analysis of the curves for the second half of the period.

juice quality after the peak period is at least twice as rapid as the rate at which it is built up to the peak—at Frome, cane quality deteriorates four times as fast as it is built up before the peak period. This rapid fall-off in juice quality is a reflection of the May and June rains and indicates clearly, the importance of avoiding late cropping as far as juice quality considerations are concerned.

The curves show that there is a strong case, on many non-irrigated estates for the manipulation of current varieties to produce an early juice of higher quality as well as a case for processing more early ripening varieties.

The ripening conditions at Gray's Inn are quite unique—the rate of improvement is small, the peak period is late and the pol % cane curve is flat and very low. The ripening conditions as reflected in pol % cane would suggest that a special variety, different from those elsewhere, will be required for Gray's Inn. Within the southern irrigated estates similar varieties will be required, whilst Frome and the north coast estates may tend to have common varieties (if they can withstand drought). Worthy Park may establish varieties suited to their conditions only.

The actual pol % cane for the 1956 crop has been superimposed on the graphs. The better than average juices at Frome and Worthy Park is a reflection of their drier than average November, January and February, whilst the much better than average juice late in the crop on the north coast estates was due to the low rainfalls received in April, May and June. The decline in juice quality which set in in February and continued to the end of crop at Jamaica Sugar Estates was due to the phenomenally heavy rains

TABLE II

AN ANALYSIS OF MEAN POL % CANE FOR THE PERIOD 1951–1955 INCLUSIVE

Factories	Approximate date at which pol % cane was at a maximum		Period during which pol % cane was not <0·5% below peak figure		Weekly change in pol % cane before and after peak periods	
	Peak value	Week ending	From:— To:—	Days	Before	After
Worthy Park	14·9	Apr. 14	Mar. 9–May 30	82	+0·094	—0·094
Frome	13·7	Apr. 14	Mar. 7–May 7	61	+0·18	—0·66
North Coast Factories* ..	13·5	Apr. 28	Mar. 28–May 21	54	+0·17	—0·35
Monymusk	13·4	Apr. 21	Mar. 16–May 26	71	+0·13	—0·16
Caymanas/Bernard Lodge ..	12·8	Apr. 21	Feb. 24–June 6	103	+0·09	—0·09
Jamaica Sugar Estates.. ..	12·6	May 5	Mar. 6–May 25	80	+0·13	—0·28
Gray's Inn	11·2	May 19	Apr. 11–June 2	52	+0·084	—0·20

* Rose Hall, Hampden, Vale Royal and Long Pond.

Under irrigated conditions it is possible to achieve a high degree of symmetry around the optimum juice quality period, as is indicated by the figures for Monymusk, Caymanas and Bernard Lodge, which has been equalled under natural rainfall conditions by Worthy Park by making maximum use of variety ripening characteristics. In the other areas the decline in which fell in February (10·7 in.) and the continuous rainy weather which persisted for the remainder of the reaping. The lack of any pronounced ripening trend at Gray's Inn was typical of many of their crops and was to be expected, since over 11 in. and 13 in. of rain were received in February and March, respectively, and this after a very heavy December rainfall.

TABLE III

Average Rainfall—Inches

	1954												1955												1956											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
GROUP A:																																				
Caymanas ..	0·88	1·50	2·17	1·05	6·16	0·62	0·68	6·40	4·74	7·16	2·78	nil	0·22	2·02	nil	2·81	2·05	7·26	3·03	6·87	6·81	4·10	1·21	1·37	0·36	0·77	1·89	2·20	1·40	1·80	4·81	2·43	1·36	13·36	3·36	0·58
Bernard Lodge ..	0·53	1·42	2·78	0·35	4·21	0·30	0·14	3·53	5·51	4·85	1·81	nil	0·59	1·51	0·33	1·38	3·02	6·23	4·17	4·70	5·82	3·05	2·46	0·27	0·15	1·40	1·64	2·47	0·93	2·23	5·33	0·68	0·37	12·22	1·92	0·96
Innswood ..	1·07	3·05	3·17	2·23	5·22	0·13	0·31	7·41	7·20	9·08	8·44	0·32	0·47	2·79	0·36	1·09	2·17	4·63	5·68	7·14	12·93	4·60	1·26	1·43	0·97	2·34	1·51	2·00	4·85	1·13	5·47	0·56	4·21	14·12	3·77	1·74
Monymusk ..	0·07	1·44	1·78	0·37	7·23	2·63	0·58	3·57	8·14	6·05	2·37	1·70	0·64	1·96	0·38	0·79	1·50	10·53	5·67	4·98	6·60	3·51	1·80	2·07	0·39	2·32	2·53	0·82	0·61	2·03	3·16	0·15	1·80	9·84	1·47	0·59
New Yarmouth ..	0·31	1·03	1·31	0·94	7·11	1·23	0·60	3·18	9·54	6·39	1·70	0·52	0·52	0·92	0·79	1·16	1·07	11·20	7·57	10·01	3·39	5·40	1·35	2·59	0·35	2·14	2·78	0·67	1·22	2·33	5·39	0·48	2·50	9·31	1·76	1·75
Sevens	0·65	2·31	2·53	2·19	11·26	2·07	1·78	5·52	11·25	6·45	4·51	0·35	0·17	3·01	2·13	2·30	4·07	8·10	6·25	5·10	6·79	5·06	1·08	2·41	nil	2·89	2·65	1·32	nil	1·66	1·33	1·13	2·45	10·58	2·58	1·72
MEANS	0·59	1·79	2·29	1·20	6·87	1·16	0·68	4·94	7·73	6·66	3·60	0·48	0·41	2·04	0·67	1·59	2·31	7·99	5·40	6·47	7·06	4·29	1·53	1·69	0·37	1·98	2·17	1·58	1·50	1·86	4·25	0·91	2·12	11·57	2·48	1·22
70-YEAR MEANS ..	1·53	1·47	1·90	2·58	5·73	4·79	2·15	4·44	5·54	8·72	4·99	1·79	1·53	1·47	1·90	2·58	5·73	4·79	2·15	4·44	5·54	8·72	4·99	1·79	1·53	1·47	1·90	2·48	5·73	4·79	2·15	4·44	5·54	8·72	4·99	1·79
GROUP B:																																				
Appleton.. ..	1·81	10·07	2·80	13·73	8·79	8·67	1·51	11·31	7·73	11·01	8·83	0·87	2·22	1·86	5·21	3·69	6·58	11·15	12·13	6·44	12·44	10·92	4·45	3·60	0·65	1·18	9·67	3·13	18·95	10·51	3·99	12·50	11·91	17·64	8·44	5·50
Holland	1·22	6·87	5·17	12·18	7·58	5·90	7·59	9·72	7·76	11·05	10·96	0·33	3·05	1·05	2·85	2·83	6·03	5·81	6·55	4·39	11·85	10·37	2·31	4·10	1·24	1·22	7·51	6·46	12·90	9·99	3·75	11·98	7·74	14·48	6·41	4·25
Frome	0·71	3·85	5·93	15·88	14·80	12·73	11·66	9·00	10·19	11·03	4·25	0·63	1·20	2·52	4·73	3·51	7·39	5·30	8·84	5·88	4·43	11·80	0·72	2·97	1·02	1·83	6·06	8·01	18·22	10·39	6·94	15·58	8·45	15·13	9·54	3·58
MEANS	1·25	6·93	4·63	13·93	10·39	9·10	6·92	10·01	8·56	11·03	8·01	0·61	2·16	1·81	4·26	3·34	6·67	7·42	9·01	5·57	9·57	10·03	2·49	3·56	0·97	1·41	7·68	5·87	16·69	10·30	4·89	13·35	9·37	15·75	8·13	4·44
70-YEAR MEANS ..	2·18	3·17	4·67	8·08	12·22	7·64	7·26	9·73	9·41	12·27	5·63	2·59	2·18	3·17	4·67	8·08	12·22	8·48	7·26	9·73	9·41	12·27	5·63	2·59	2·18	3·17	4·67	8·08	12·22	7·64	7·26	9·73	9·41	12·27	5·63	2·59
GROUP C:																																				
Barnett	0·25	6·25	4·12	2·93	12·76	1·37	5·18	2·78	13·65	7·11	2·62	2·92	3·39	1·11	nil	0·26	2·78	7·21	3·46	9·41	8·18	7·54	2·01	4·16	1·28	0·30	6·36	0·58	6·87	4·42	6·74	4·08	6·03	5·71	5·66	1·41
Rose Hall ..	0·94	3·82	1·81	1·38	2·33	1·79	1·25	2·18	8·52	8·60	6·98	2·67	3·14	2·84	0·06	0·56	1·88	9·50	1·54	5·36	7·88	4·46	1·43	4·12	0·88	2·11	1·80	1·03	2·60	2·79	2·79	1·87	2·76	8·23	8·06	1·17
Hampden ..	1·48	6·38	2·52	3·41	6·44	7·40	5·87	5·52	14·52	6·87	6·43	1·97	4·68	2·17	0·23	0·94	4·13	11·04	8·83	5·95	8·02	6·62	2·11	5·24	1·63	0·66	6·84	3·20	7·40	3·43	4·82	4·19	5·18	7·35	6·40	2·94
Long Pond ..	0·52	5·06	2·32	2·77	3·83	2·91	2·47	4·30	7·02	8·44	4·82	2·88	3·42	4·21	nil	1·36	1·80	7·29	3·00	5·18	4·96	4·10	2·29	4·38	1·44	1·44	3·26	0·88	3·47	3·27	3·63	1·88	4·94	4·78	4·23	1·69
Vale Royal ..	1·00	6·08	3·05	3·40	4·69	3·85	3·58	3·93	5·65	10·21	5·39	3·78	4·59	4·26	0·09	1·10	1·64	5·77	3·22	7·24	5·47	7·11	3·00	6·30	1·84	2·31	5·72	0·65	4·66	5·63	3·88	2·56	2·29	5·50	6·19	2·14
MEANS	0·84	5·64	2·76	2·78	6·01	3·46	3·57	3·74	9·87	8·25	5·25	2·84	3·84	2·92	0·08	0·84	2·45	8·16	3·01	6·63	6·90	5·87	2·17	4·84	1·43	1·40	4·84	1·27	5·00	3·51	4·27	2·92	4·24	6·32	6·11	1·87
70-YEAR MEANS ..	3·62	2·15	1·91	2·66	6·44	4·52	2·71	4·19	5·12	6·72	5·76	5·43	3·62	2·15	1·91	2·66	6·44	4·52	2·71	4·19	5·12	6·72	5·76	5·43	3·62	2·15	1·91	2·66	6·44	4·52	2·71	4·19	5·12	6·72	5·76	5·43
GROUP D:																																				
Richmond-Llandovery.. ..	2·95	6·10	2·17	4·44	2·93	3·86	1·30	5·20	6·57	8·63	9·93	2·50	2·04	2·79	0·98	3·46	4·01	1·92	1·96	2·75	10·08	8·48	3·39	10·84	2·88	4·28	6·93	0·54	6·45	1·77	1·57	1·45	0·46	6·39	10·30	5·65
70-YEAR MEANS ..	5·69	4·06	2·88	3·69	6·18	4·06	2·06	2·97	3·71	6·87	9·39	7·46	5·69	4·06	2·88	3·69	6·18	4·06	2·06	2·97	3·71	6·87	9·39	7·46	5·69	4·06	2·88	3·69	6·18	4·06	2·06	2·97	3·71	6·87	9·39	7·46
GROUP E:																																				
Gray's Inn C. ..	3·38	9·92	2·75	4·64	1·97	2·25	2·23	4·03	4·68	9·19	9·39	6·91	2·40	8·68	0·41	2·28	2·80	7·36	4·65	2·62	7·49	6·48	5·35	12·75	2·36	11·32	18·03	2·24	5·12	0·84	2·19	1·77	1·65	6·65	15·40	16·52
70-YEAR MEANS ..	No satisfactory long averages available																																			
GROUP F:																																				
Jam. Sug. Ests...	3·12	9·58	5·06	11·01	4·70	8·45	5·56	7·06	21·09	27·42	3·49	3·86	1·51	11·08	1·73	0·77	16·99	8·46	6·20	10·65	10·22	11·42	3·19	10·65	0·53	10·71	5·80	7·42	5·22	5·53	5·84	8·01	3·95	16·94	6·00	4·91
Serge Island ..	1·21	2·69	2·80	6·18	8·92	4·10	7·88	12·80	24·01	24·18	3·57	2·27	1·32	5·84	0·16	0·69	9·68	15·96	10·42	8·62	9·47	11·27	0·93	7·71	0·23	9·57	3·29	5·22	3·84	7·93	7·40	3·59	4·95	15·40	6·85	0·65
MEANS	2·16	6·13	3·93	8·59	6·81	6·27	6·72	9·93	22·55	25·80	3·53	3·07	1·42	8·46	0·95	0·73	13·34	12·21	8·31	9·64	9·84	11·34	2·06	9·18	0·38	10·14	4·55	6·32	4·52	6·73	6·62	5·80	4·45	16·17	6·43	2·78
70-YEAR MEANS ..	No satisfactory long averages available																																			
GROUP G:																																				
United Estates ..	2·11	4·34	4·88	6·06	9·47	4·82	6·18	8·81	8·04	8·62	4·16	1·07	0·85	6·74	1·11	2·49	6·51	9·24	8·16	6·28	6·16	6·77	3·95	3·77	0·74	1·04	3·42	4·93	7·94	8·67	8·21	6·83	5·26	12·35	3·14	1·56
Worthy Park ..	1·29	6·28	3·85	3·37	11·26	3·42	3·39	7·14	7·84	9·82	5·87	1·18	0·74	5·20	0·86	2·98	5·11	10·99	5·87	5·13	6·51	8·22	2·86	3·13	0·97	0·91	4·03	4·61	8·11	7·93	7·40	3·59	4·95	15·40	6·85	0·65
MEANS	1·70	5·31	4·36	4·72	10·36	4·12	4·78	7·47	7·94	9·22	5·02	1·13	0·79	5·97	0·98	2·74	5·81	10·12	7·02	5·71	6·33	7·49	3·41	3·45	0·86	0·97	3·72	4·77	8·02	8·13	7·95	4·89	3·90	12·47	4·06	1·87
70-YEAR MEANS ..	2·47	2·04	2·62	3·96	8·11	7·26	5·03	6·59	7·16	9·70	6·22	2·88	2·47	2·04	2·62	3·96	8·11	7·26	5·03	6·59	7·16	9·70	6·22	2·88	2·47	2·04	2·62	3·96	8·11	7·26	5·03	6·59	7·16	9·70	6·22	2·88

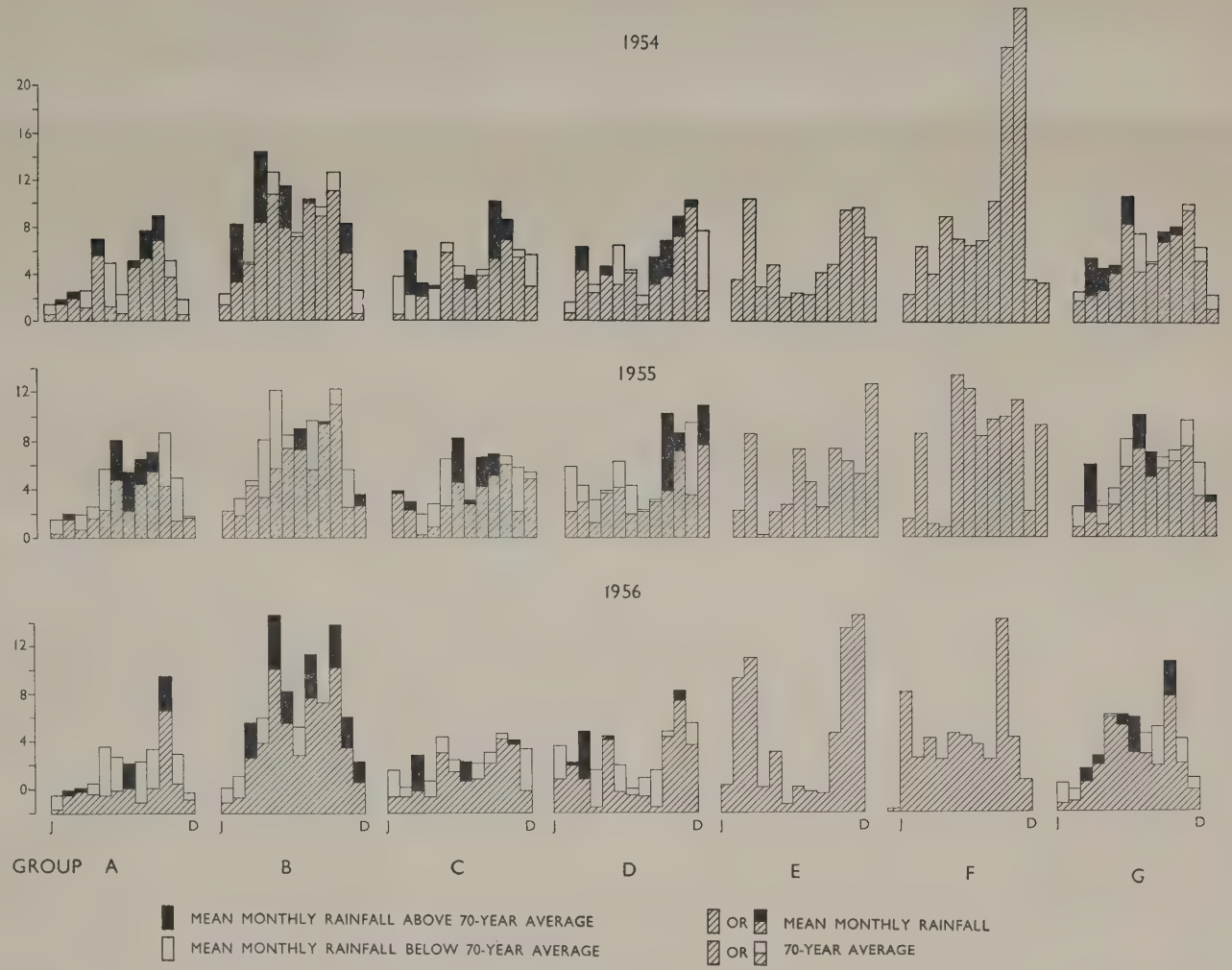
1954
1955
1956
20
16
12
8
4
0
J
D
GROUP A
B
C
D
E
F
G
MEAN MONTHLY RAINFALL ABOVE 70-YEAR AVERAGE
MEAN MONTHLY RAINFALL BELOW 70-YEAR AVERAGE
OR
MEAN MONTHLY RAINFALL
OR
70-YEAR AVERAGE

FIGURE 3

TABLE IV

No. of Days in Each Month on which Average Precipitation Exceeded 0·5 Inches

	1954												1955												1956											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
GROUP A:																																				
Caymanas ..	–	1	1	–	4	–	–	5	3	5	1	–	–	1	–	1	–	5	1	5	4	2	1	1	–	1	1	2	–	1	2	–	–	6	1	–
Bernard Lodge	–	1	2	–	2	–	–	3	3	3	–	–	–	1	–	1	3	4	3	4	4	2	3	–	–	1	1	2	1	2	2	–	–	5	1	–
Innswood ..	–	2	3	1	3	–	–	5	5	6	5	–	–	2	–	1	1	3	4	4	7	3	–	1	–	2	1	2	4	–	3	–	3	7	3	1
Monymusk ..	–	1	2	–	2	1	–	2	5	5	2	2	–	2	–	–	1	9	3	3	2	2	1	1	–	2	2	1	–	1	2	–	1	3	1	–
New Yarmouth	–	–	1	–	3	1	–	1	7	5	–	–	–	–	1	1	–	9	2	3	1	4	1	2	–	1	1	–	1	2	2	–	1	3	1	–
Sevens ..	–	1	1	–	5	1	1	4	10	5	1	–	–	2	2	2	3	6	–	4	6	3	1	2					Not	recorded						
GROUP B:																																				
Appleton ..	1	8	2	10	5	6	1	8	6	9	8	1	2	1	3	4	3	9	8	4	10	7	4	2	–	1	7	2	14	7	3	10	9	13	5	3
Holland ..	1	3	5	11	6	5	6	8	2	6	8	–	2	–	2	2	4	5	6	2	8	8	1	3	–	1	6	3	7	7	3	9	6	12	3	4
Frome ..	–	2	4	14	12	10	9	7	8	11	2	–	1	1	2	1	5	2	6	4	2	9	–	1	–	–	3	4	13	8	5	14	8	6	7	2
GROUP C:																																				
Barnett ..	–	3	3	3	10	1	5	3	8	6	1	2	1	–	–	–	3	6	2	10	6	6	2	2	1	–	4	–	4	3	4	2	2	1	4	–
Rose Hall ..	–	2	1	–	2	–	–	1	6	6	6	1	2	1	–	–	1	4	1	5	6	4	–	2	–	3	1	1	2	1	1	2	2	4	6	–
Hampden ..	1	5	1	1	4	7	4	4	7	5	5	1	3	1	–	–	4	5	3	3	6	4	1	4	–	–	5	2	5	1	2	3	4	3	5	2
Long Pond ..	–	3	1	1	2	–	2	1	3	5	4	2	10	2	–	1	–	5	2	2	3	3	2	4	–	1	3	–	2	3	1	–	3	3	1	1
Vale Royal ..	–	3	2	2	1	2	1	1	3	9	3	2	12	3	–	–	–	4	3	5	3	3	1	4	–	3	4	–	2	3	4	1	2	3	2	1
GROUP D:																																				
Richmond-Llandovery..	1	4	2	3	2	2	1	3	4	9	7	2	1	2	–	1	2	2	1	1	5	6	3	5	1	2	5	–	4	–	–	–	–	3	6	3
GROUP E:																																				
Gray's Inn ..	2	4	1	5	1	1	1	2	2	5	5	2	1	1	–	1	2	4	2	2	3	3	1	9	2	5	7	1	3	–	1	1	1	3	7	5
GROUP F:																																				
Jam. Sug. Ests.	2	7	3	2	3	5	2	5	7	11	1	1	2	4	–	–	6	6	4	6	8	8	2	7	–	5	3	4	3	4	5	3	1	7	4	3
Serge Island ..	1	1	1	3	5	3	5	8	13	12	3	2	1	4	–	–	4	8	7	5	5	7	–	5	–	4	3	2	3	4	5	1	5	9	6	–
GROUP G:																																				
United Estates	1	3	3	4	6	3	4	7	4	5	2	–	–	5	–	1	3	5	5	5	4	4	2	3	–	–	–	3	5	4	7	6	4	6	2	–
Worthy Park ..	1	3	2	1	3	2	3	6	4	8	4	–	–	4	–	2	3	6	4	4	5	5	3	1	–	–	3	3	7	6	5	2	2	6	3	–

C. CLIMATE

Average monthly rainfall figures over the last three years for estates in their appropriate Groups, are given in Table III and illustrated in Figure 3, whilst Table IV shows the number of days in each month on which average precipitation exceeded 0·5 in.

The total rainfall during the year was distributed most unevenly between the main sugar areas. Whereas the rain received by Group G was near average, the irrigated estates (Group A) were short 13·5 in. on an average of 45 in.; the Trelawny and St. James estates (Group C) were short of 8 in. on 51 in.; Group D was short 10 in. on 59 in., whilst Group B estates received 14 in. in excess of their average of 85 in.

On the whole, the industry suffered a severe water shortage which produced its greatest effects on the irrigated estates, particularly at Monymusk and Sevens where water supplies were very greatly strained, and at Gray's Inn Central where the rains for June to September failed critically. Growth was adversely affected on Group B estates by the excessive rains, but improved on Jamaica Sugar Estates by the even distribution of monthly rain. Growth on Group G estates was set back by the later arrival of September rains. With the exception of Gray's Inn (Group E) and the St. Thomas estates (Group F) early spring conditions for land preparation were excellent.

Rainfall analysis over the past ten years shows that the monthly distribution of Gray's Inn Central rainfall is most erratic and that wide variations in the yield of sugar per acre are to be expected from year to year. The incidence of heavy rains in December and/or February is common, so that juice quality, especially if crop is commenced early, will be inevitably poor.

Rainfall Analysis

An analysis of rainfall data must depend upon there being available records extending back over very long periods of time. It is fortunate that monthly rainfall figures extending back over a period of more than 70 years for some of the rain gauges in sugar areas exist in the library of the Meteorological Office, Palisadoes. These records are kindly being made available to this Department, and with their use it has been possible to compute the probability of receiving minimum quantities of rain in any month for some sugar areas.

To illustrate typical results, the data for Rose Hall and Worthy Park are given. Figures 4 and 5 show the probability with which minimum quantities of rain is related to the estimated monthly water demand by a field of cane. The results have been presented in this way since it is the minimum rainfall received in any month which is the greatest factor limiting growth. Average monthly figures are of relatively much less value and are often biased by the incidence of exceptionally heavy rains in some years. The much more cautious interpretation of mean monthly rainfalls as a result of introducing a probability analysis is evident.

The probabilities with which monthly rainfalls at least equal to the evapotranspiration requirements of cane are received, show clearly the much greater water risks run at Rose Hall compared with Worthy Park and the generally deficient nature of rainfall at Rose Hall in all months except October and November.

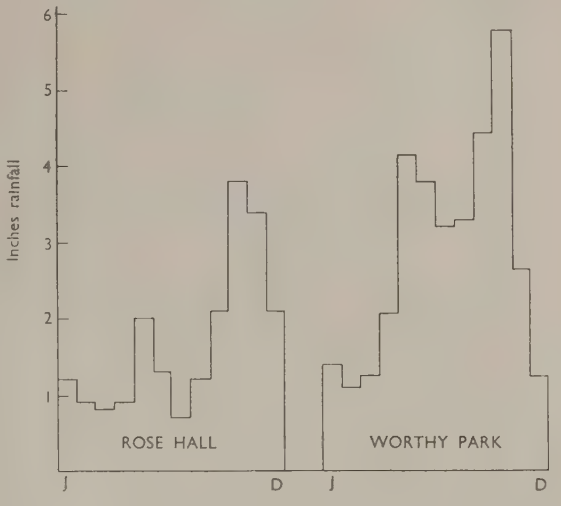

FIGURE 4

Mean monthly rainfall, the probability of obtaining which is at least 3 : 1

D. IRRIGATION

Irrigated sugar cane constitutes approximately one-half of estates' production, and irrigation charges are the heaviest single item of expense connected with the production of this cane. The optimum use of water is therefore of the very greatest importance. The studies in operation deal with three phases of the problem:—

(i) The fundamental water requirements of the sugar cane plant;

(ii) The reaction of the crop to the way in which water is applied, i.e. surface or overhead;

and (iii) Current irrigation practices and the infield distribution of water.

Evaporation studies, of which the scope and object have been described in a previous report, have been concluded. Interest is now mainly concentrated on the application of the results to irrigation management.

Open Water Evaporation

Monthly estimates of open water evaporation at Monymusk in the period April 1954 to March 1956 making use of a slightly modified Penman's equation, agreed with measured values to the extent of 94%. The closeness of the correlation is demonstrated in Figure 6 where it is compared with that obtained using three other relations. It is now believed that the water requirements of sugar cane can be forecast accurately from meteorological data.

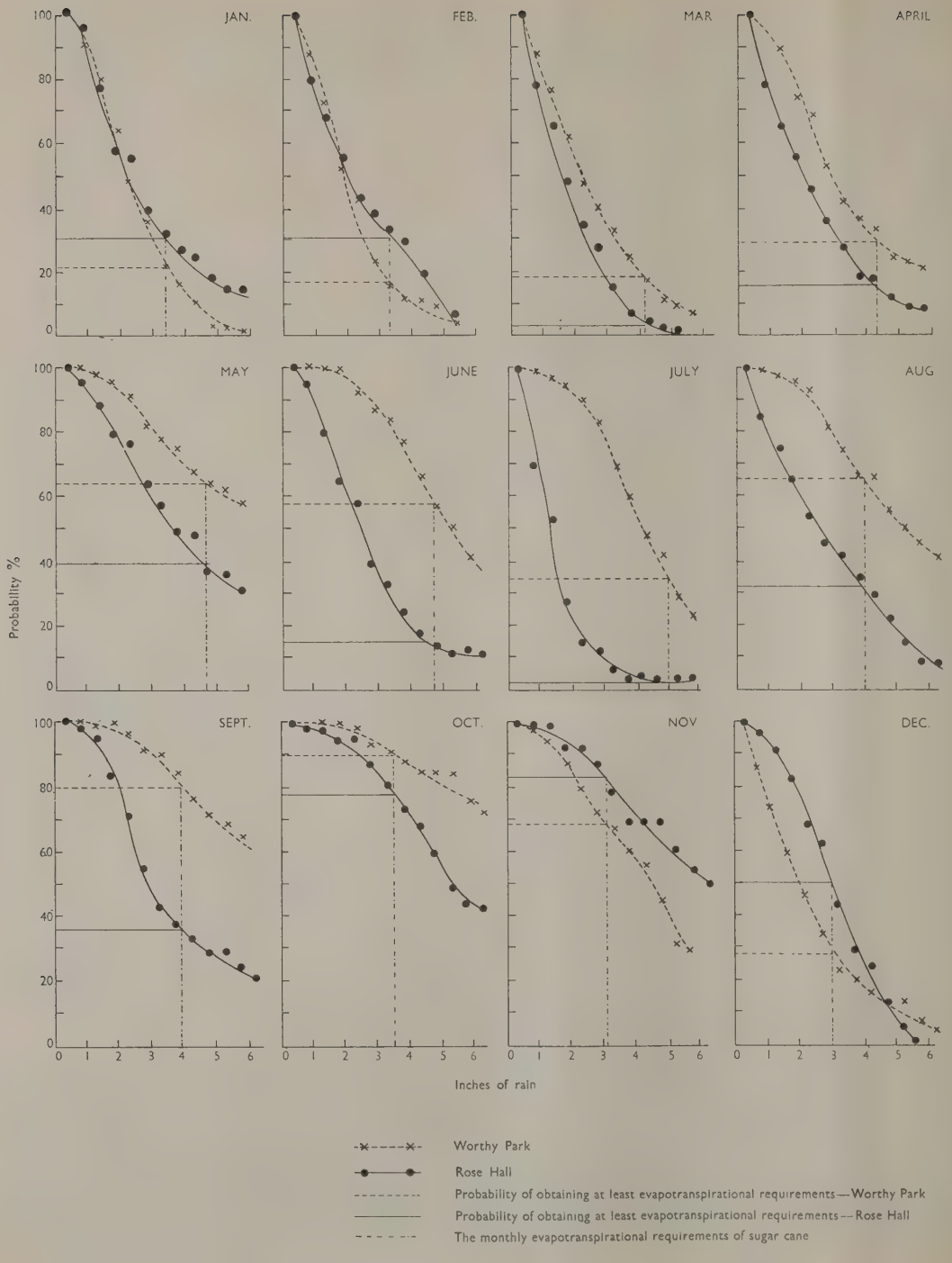

FIGURE 5
The probability of obtaining at least a given quantity of rain

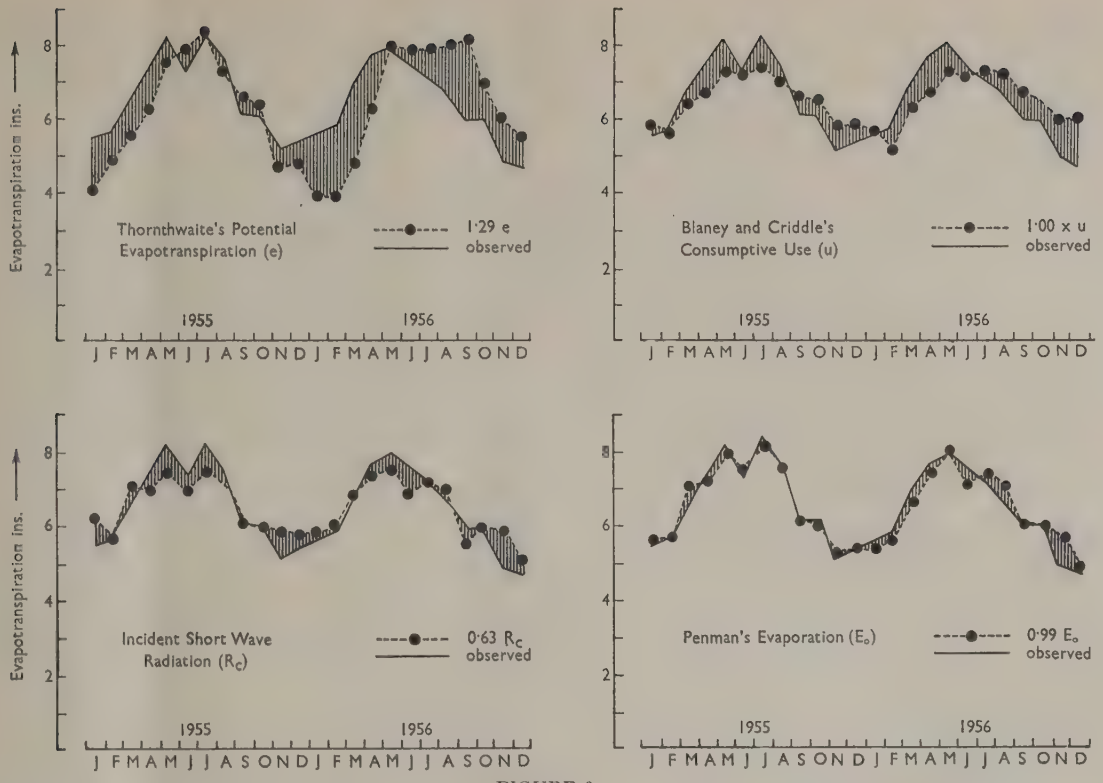

FIGURE 6

The agreement between deduced and observed evaporation from a standard meteorological evaporation tank

Evaporation from Sugar Cane

The relation between the evaporation rate from cane E_t (over periods of approximately 8 days) as determined by lysimeter studies extending over 13 months at Monymusk, and evaporation from a standard water tank E_o, is illustrated in Figure 7.

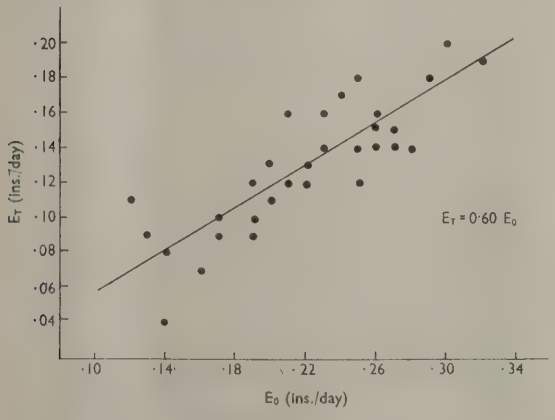

FIGURE 7

The mean relation between evaporation and transpiration

Part of the scatter points about the regression line can be statistically accounted for in terms of fluctuations in the retention of soil moisture by the lysimeters, and the following equations (see Figure 8) has been developed for the probable error of the estimate of:—

$$E_t - 0{\cdot}6E_o) = \pm \frac{0{\cdot}1}{(4{\cdot}1n - 0{\cdot}03n^2)^{0{\cdot}5}}$$

where n is the length of the period in days over which E_t is estimated.

An approximate theoretical estimation of the ratio E_t/E_o, based upon the stomatal geometry of the cane leaf, yields monthly values, over the same period, ranging seasonally from 0·60 to 0·73 with a mean of 0·66. While the mean is significantly greater than that determined by experiment, in view of the many assumptions made in its derivation, the discrepancy is not serious. The value of E_t/E_o of 0·60 is confirmed by an independent experimental method described in a previous report, and will henceforth be used in calculations of soil moisture deficits.

The extent to which the assumed factor of 0·60 accounts for evapotranspiration from lysimeters is summarized diagramatically in Figure 9.

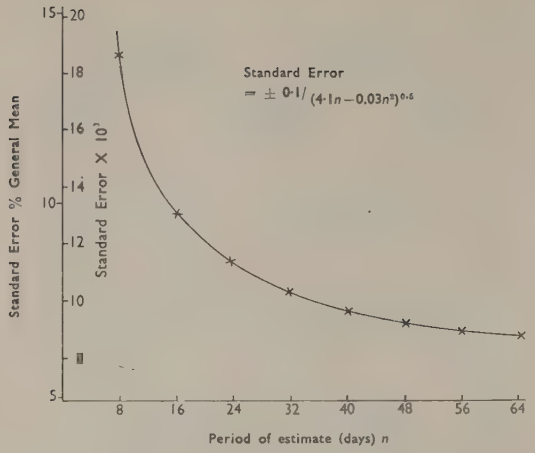

FIGURE 8

The relation between the standard error of (E_T − 0·6 E_o) and the period of the estimate in days

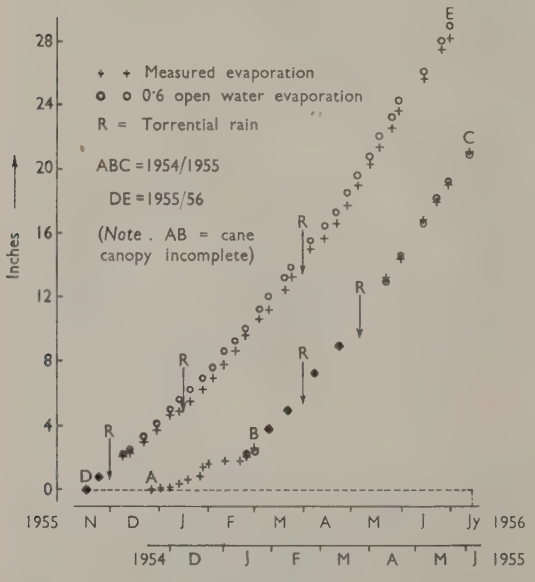
Measured evaporation
0·6 open water evaporation
R = Torrential rain
ABC = 1954/1955
DE = 1955/56
(Note . AB = cane canopy incomplete)
Inches
1955 N D J F M A M J Jy 1956
1954 D J F M A M J 1955

FIGURE 9

The agreement between E_T and 0·6 E_o in two successive years

Cane growth and soil moisture deficits

Experimental data obtained by Thompson and Floyd of The West Indies Sugar Company Ltd., at Monymusk, relating to the irrigation of B42231 on heavy marine clay and with particular reference to the use of gypsum blocks, were found also to yield interesting information on the relationship between soil moisture deficit and cane growth. The average weekly rate of growth (elongation) G was regressed on the estimated average soil moisture deficit, D, in the same intervals. The form of the regression line, significantly better than several more simple curves, is shown in Figure 10 and is described by the equation:—

$$G = \frac{93}{(_e 1{\cdot}44D + 172)}$$

The equation indicates that in practice, with B42231 on this soil, very little growth is lost so long as deficits are not allowed to exceed 2 in. When the deficit is much above 2 in. a serious inhibition of growth takes place and at 4–5 in., growth has practically ceased. A 2-in. deficit corresponds to a 16-day drought or the optimum irrigation cycle proposed by Thompson and Floyd as a result of an analysis of cane yields. The relation can be regarded as a modified Mitscherlich equation; it has its counterpart in plant nutrition when increases of fertilizer application above a certain level may not only be of no benefit, but may actually inhibit growth.

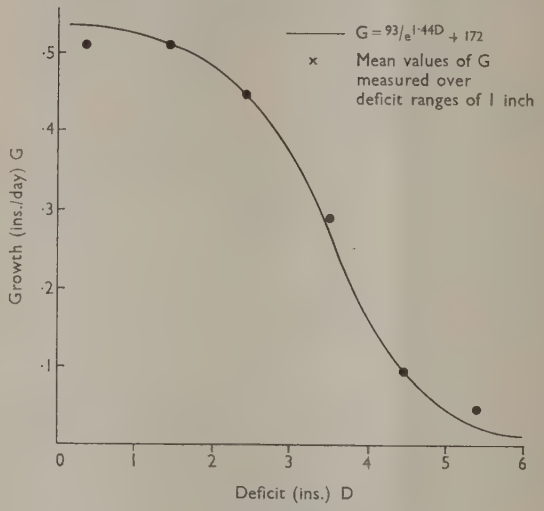

FIGURE 10

The relation between growth and deficit

An integration of the equation with respect to time for the different treatments gives a good measure of relative plot yields, which would be in general accord with Thompson and Floyd's observation that total elongation correlated closely with tonnage of cane per unit area for the different treatments. The equation may well therefore have practical significance in evaluating irrigation cycles as actually being practised.

Irrigation, fertilizers and yield

Studies related to the development of economic optimum irrigation supplies are very well worth while on Monymusk, Bernard Lodge, Innswood and Sevens, and to lesser degrees on many other estates. The

problem can be effectively tackled in part, by relating irrigation interval to its resultant increased tonnage of sugar per acre, but clearly this is part of a wider analysis involving the economic pros and cons of increasing the efficiency of distribution versus the production of more irrigation water "at source."

Work was commenced at Monymusk, a series of 3 x 3 x 3 NPK experiments being dispersed over the estate in a manner such that each block of the three in a replicate received a different irrigation treatment. Twelve fields, each containing one replicate, were successfully managed. Irrigation was applied at average maximum deficits of 2·4, 1·7 and 1·0 in., and the average mean deficits were 1·1, 0·8 and 0·5 in. The least frequent cycle was still somewhat more frequent than estate practice.

On the whole, irrigating at deficits of 2·4 in. in plant cane increased yields by 13%, which was highly significant; but irrigating at a deficit of only 1·0 in. produced no further increase; there was even an indication that such frequent irrigation might have been harmful, which conclusion would have been compatible with the foregoing analysis of cane growth and soil moisture deficit.

Although the interaction tables in individual experiments were variable, the average taken from all experiments suggests that the nitrogen requirement of plant cane will increase if cycles are made very frequent. At optimum cycles it is doubtful if applications need be increased above present practice.

A survey of the adequacy of irrigation cycles

A start was made during the year on evaluating the effects of varying irrigation cycle lengths upon yield. At Innswood, 56 plots on 14 fields dispersed over the cane area, are receiving differential irrigation treatments so that the effects of irrigating at deficits of 1·5, 2·0, 2·5 and 3·0 in. can be studied. A similar approach is being evolved for use at Bernard Lodge with the co-operation of the Research Office of that estate. Growth measurements are being kept and from the data it is hoped to obtain relations between growth, yield and deficit.

Elongation curves, accumulated deficit and yield

This work was concluded during the year at Richmond-Llandovery. The two formal field experiments designed to relate yield to accumulated deficit were continued. The plant cane and 1st ratoon results show that during the duration of the experiments, rainfall was such that in spite of the range of deficits aimed at by the treatments, no treatment attained a *mean* deficit in excess of 1·0 in. The maximum deficits aimed at were 1, 2 and 3 in. It is not surprising therefore that no treatment produced any significant effect on yield, nor was it surprising that no significant relationship could be obtained between accumulated cane elongation and yield.

Under the conditions in which these experiments were carried out, i.e. overhead irrigation on a clay loam of good structure overlying a fairly well structured, calcareous clay subsoil into which some roots penetrated to a depth of 3 ft. or more, growth curve analyses show that no benefit was gained by attempting to maintain soil moisture deficit below a value of less than 2 to 2·5 in.

Growth studies were carried out on 30 representative fields varying in soils between the type already described on the one hand, and deep, excessively stony, loose gravelly, calcareous profiles on the other. Irrigation was carried out according to normal practice and the deficits calculated from data supplied by suitably placed rain gauges and a central meteorological station. Within the deficits recorded, no significant relationship could be established between growth rate and deficit, indicating that deficit never became a factor seriously limiting growth. Rain gauge records show that only in January did deficits exceed 2 in. and then only on 0·75 of the area. The number of irrigations which were computed to be necessary in each month to maintain deficits below 2 in. are given in Table V.

In Table VI a comparison is made between the number of irrigations actually applied to all 30 fields and the minimum number of irrigations which were necessary to maintain soil moisture deficits below 2 in.

TABLE V

No. of Irrigations Necessary in Each Month to Maintain Deficits Below 2 in. for Fields in the Vicinity of Four Rain Gauges

Location	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Enclosure	None	None	None	None	None	None	None
Seaside	None	None	None	None	1	None	None
Clinic	None	None	None	None	1	None	None
Priory	None	None	None	None	1	None	None

TABLE VI

The Number of Irrigations Applied and Irrigations Needed

	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total
No. of irrigations applied to the 30 observed fields:—	12	2	3	23	31	17	30	118
No. of irrigations required to maintain deficit < 2 in.	0	0	0	0	25	0	0	25
Surplus	12	2	3	23	6	17	30	93

To have maintained soil deficits below 1 in. would have required four times as many irrigations as would have been used to maintain deficits below 2 in.

Overhead *v.* surface irrigation

The fall plant cane results from the surface *v.* overhead irrigation experiment became available during the year. The experiment was designed to test the effects of surface *v.* overhead application of irrigation water on two varieties, B42231 and B4362, planted at 2·5 and 5 ft. row spacing. The experiment was only made possible by the co-operation of Caymanas Estates Ltd., at whose expense it was laid out. The investigation was not carried out to establish that less water is used when applied by overhead means, but to decide whether overhead watering is better than surface watering, each in the absence of a water shortage. The overhead treatment was at the rate of 1·5 in. per ten days, less any contribution by rain.

The effects on juice quality were not significant so that the yield of cane only need be considered. The mean yield from surface irrigation was 66·5 tons as against 64·7 tons from overhead irrigation, showing that the two treatments were equally effective. Furthermore, there were no variety x irrigation interactions so that the foregoing conclusions apply to both B4362 and B42231. There was a suggestion in the results that B42231 did better when planted closely under overhead irrigation, whilst B4362 did better if widely spaced. These effects, although much less pronounced, were still suggested where irrigation was by surface means.

The experiment was carried out on a free draining, deep, sandy loam where seepage losses were appreciable. Under such conditions, the results from plant cane suggest that the merits of overhead irrigation rest entirely on water conservation arguments or the greater use to be obtained from a given volume of water. The experiment is being continued into ratoons.

An evaluation of different methods of surface irrigation

The system in general use for the distribution of irrigation water depends upon a series of parallel irrigation ditches (twigs) running across cane rows at intervals of 11 yds., and connected by a system of larger ditches running parallel with the cane rows at intervals of about 33 yds. In many areas, especially on the lighter soils, cane is not cultivated in a well defined ridge and furrow system although the tendencies in this direction are increasing, and especially on heavier soils, where cane cultivation in well defined banks is becoming widespread. Improvements in the distribution of water within fields will depend upon increasing the forward movement of water with respect to seepage considerations, and in making the whole infield management of water more automatic. In all this, the development of a well corrugated land surface is of importance, and on heavy soils, the removal of excess water also has to be taken into account.

Work initiated at Innswood in 1954 and continued since, has tested the following treatments on heavy marine clay:—

(i) Irrigating every furrow between bank planted cane, the cane rows being spaced at 5 ft. centres and twigs being 11 yds. apart—the standard system at Innswood.

(ii) Irrigating alternate furrows between bank planted cane, the cane rows being spaced 5 ft. apart and the furrows, down which no water passes, having been sunk to form drains; cross irrigation ditches spaced at 110 yds.

(iii) Irrigating every furrow between banks 10 ft. wide, two cane rows on each bank and twigs 11 yds. apart.

(iv) Irrigating alternate furrows between bank planted cane spaced 5 ft. apart, with drains dug parallel to the rows at distances of 20 ft. apart; cross irrigation ditches spaced at 110 yds.

To date, the results from plants and 1st ratoons are available. The effects upon juice quality were not significant so that the cane yields only are given in Table VII:—

TABLE VII

CANE YIELDS RELATIVE TO THE STANDARD PRACTICE (AT 100%)

Treatments	Plants	1st Ratoons	Average
(i)*	25·5	36·9	31·2
(ii)*	105	96	100
(iii)*	101	91	96
(iv)*	102	99	100

* As above

No real loss in yield has been established as a result of irrigating every other row although field observations showed that less water was used to irrigate alternate row treatments. Neither apparently, did the cane suffer when irrigation "lines" of water were increased to 110 yds.

Encouraged by these results, a similar experiment was laid out in 1955 at Windsor Park (United Estates) on like land. The spring plant crop reaped in 1956 suggested that the yield from two cane rows on a 10 ft. bank was slightly below the other treatments, but this difference did not reach significance.

In the spring of 1956 another two similar experiments were laid out on heavy clay soils at Monymusk and Sevens. The appearance of the plots gives no indication of any detrimental effects due to growing two rows of cane on a single 10 ft. bank.

E. NUTRITION

The fertilizers used during 1956 and the manner in which they were applied are given in summary form in Table VIII.

The position in regard to nitrogen and potash is generally similar to that in previous years except that the rate per acre for each was slightly less than in

TABLE VIII

Fertilizers Used for Each Cane Class

Class	Nitrogen				Phosphate				Potash			
	Acres fertilized	Tons N used	Mean lb./acre	Acres fert. % total acres reaped	Acres fertilized	Tons P_2O_5 used	Mean lb./acre	Acres fert. % total acres reaped	Acres fertilized	Tons K_2O used	Mean lb./acre	Acres fert. % total acres reaped
Fall plants	2252	80	80	96	215	3	36	9	1340	49	82	57
Spring plants ..	7159	238	74	99	1048	16	35	14	4063	137	75	56
Standover	72	4	112	100	—	—	—	—	—	—	—	—
1st ratoons	12316	432	79	100	945	14	32	8	5280	185	79	43
2nd ratoons	12528	420	75	99	1463	19	29	12	6137	217	79	49
3rd ratoons	10889	343	71	99	675	10	33	6	6140	226	83	56
Old canes ..	15166	471	70	98	586	11	41	4	8377	307	82	54
Total ..	60382	1988	74	99	4932	73	33	8	31337	1121	80	51

former years—most probably a reflection of a reaction to a policy of limitation of production. The general maintenance of the proportionate area fertilized with potash is sound and it is hoped that this will be continued.

An improved index of nutrition

Much use has been and is being made of the composition of cane leaf material as an index of the nutrition of sugar cane. During the year much of the data accumulated on the composition of cane stalks, internode by internode, from dispersed block fertilizer experiments, has been analysed statistically in order to determine whether an improved index of nutrition is available by following changes in stalk composition. Two stalk sampling ages were used—4·5 and 6 months, whilst leaf nitrogen was studied at 5 months and used as a standard. The more interesting correlations between the production of sugar per acre and the composition of index tissue are given in Table IX:—

TABLE IX

The Relation Between Tissue Composition and Sugar Yield Per Acre

Correlation of sugar per acre upon:—	Regression coefficient
Ratio of nitrogen % dry matter of basal internodes to nitrogen % dry matter of (5–6) internodes, all at 6 months	0·04
Ratio of nitrogen % dry matter of basal internodes to nitrogen % dry matter of (1–2) internodes, all at 6 months	0·00
Nitrogen % dry matter of (1–2) internodes at 4·5 months	0·73*
Nitrogen % dry matter of basal (=3–4) internodes at 4·5 months	0·41*
Nitrogen % dry matter of basal internodes sampled at 6 months	0·35†
Nitrogen % dry matter of (1–2) internodes sampled at 6 months	0·68*
Nitrogen % dry matter of leaf lamina sampled at 5 months	0·47†

* = Significant at >1000:1. † = Significant at >100:1.

The internodes are counted downwards, the internode subtended by the uppermost leaf showing a ligule (dewlap) being No. 1. The internodes numbered 5–6 would be equivalent to Burr's 8–10 internodes in Hawaii. The relationship between nitrogen in the 1–2 internodes sampled at 4·5 months correlates best with the yield of sugar, and significantly better than the relation between yield and leaf nitrogen or any other tissue composition except nitrogen % dry matter of the 1–2 internode material. In general, it would appear that nitrogen % dry matter in the 1–2 internodes, i.e. just below the growing point correlated better with yield than the nitrogen content of the basal internodes and stalk composition at 4·5 months correlated better than stalk composition at 6 months age. Maximum sugar yields were related to the incidence of nitrogen values of 2·4% dry matter in leaf lamina material and a nitrogen status in the dry matter of the 1–2 internodes of at least 0·45%.

The variation in phosphate content of different parts of the stalk indicates that the internodes near the apical point were more sensitive to soil treatment than the base of the stalk and that stalk phosphate levels were more sensitive than leaf lamina phosphate. A phosphate (P_2O_5) status of the order of not more than 0·10% dry matter would appear to be at least adequate in the 1–2 internode dry matter material sampled at 4·5 months; at 6 months the figure is 0·12% or even less. In the basal internodes, 0·07% P_2O_5 in dry matter was at least adequate at 4·5 and 6 months,

whilst in the leaf at 5 months, the figure is about 0·43%.

The stalk uptake of potash is very sensitive to soil treatment, and luxury consumption levels are easily possible—much more so than in the leaf lamina. Thus potash levels in the stalk have been shown to rise sharply even at levels of treatment where yield is completely unaffected. The relative sensitivity of the different tissues is given by the following values for "variance % general mean":—

	Variance % general mean
1–2 internodes at 4·5 months	10
1–2 internodes at 6 months	41
Basal internodes at 6 months ..	55
Leaf lamina at 5 months	3
Sugar per acre	3

The data analysed have not thrown much additional information of practical value, but have confirmed that leaf lamina potash (K_2O) levels of 1·3–1·4 at 5 months are adequate for optimum yields.

To summarize, the data analysed suggest that much useful information about nitrogen uptake and yield responses may be obtained from stalk analysis, especially of the tissues near the apical bud; that stalk analysis may well prove of value also with phosphate, but that it is doubtful if much of value will result from the potash levels in stalk tissues.

Further studies with aqueous ammonia

The results of laboratory investigations on the loss of aqueous ammonia from soils were quoted in last year's Annual Report as also were the results of some field experiments. During the year, further field experimental data became available and these are summarized in Table X:—

On the average, at Frome, Caymanas and Richmond-Llandovery, aqueous ammonia was only about 70% as effective as sulphate of ammonia, 60% as effective at Vale Royal and only 45% as effective at Jamaica Sugar Estates, and in most instances it was very much less effective relative to sulphate of ammonia at the higher rates of application than at the lower—an observation consistent with the incidence of comparatively greater losses of ammonia at higher rates of application. The data confirm other work and are in agreement with the results of laboratory investigations, viz. that when applied by tynes, aqueous ammonia is not as effective as sulphate of ammonia.

The results of applying aqueous ammonia in irrigation water to five fields at Caymanas, compared with sulphate of ammonia are given in Table XI.

The effect of aqueous ammonia might have been improved somewhat by maintaining its concentration in irrigation water at very low levels (e.g. below 110 p.p.m. NH_3) but even at such concentrations, the variation in uniformity of distribution was shown to be very appreciable. Leaf nitrogen studies showed that on light and medium textured soils, the uptake of nitrogen by the plant fell off in relation to its distance from the point at which ammonia was injected into the irrigation water.

Leaf nitrogen data obtained at 5 months cane age, confirmed the relative value of aqueous ammonia to sulphate of ammonia as established by the yield of field experiments.

The value of late nitrogen applications

Results obtained last year on the responses from the late (6 months cane age) application of nitrogen on calcareous soils at Richmond were confirmed by the results of a second experiment reaped during the year under review. The equivalent of 1 cwt. per acre sulphate of ammonia applied as urea through the overhead irrigation risers at 6 months cane age, resulted

TABLE X

Cane Yield Relative to Control at 100

Experiment sites	S/A		A/A	
	2·5*	5·0*	2·5*	5·0*
Frome—Mitchell	138	149	124	127
—Peter Plain ..	115	132	119	124
—Village	100	117	83	99
—West Flat ..	125	151	124	136
Caymanas	106	112	102	112
Richmond-Llandovery ..	143	183	132	145
Mean (excluding Frome—Village†) ..	125	145	120	129
Mean of both levels	135		125	

Experiment site	S/A		A/A	
	3·3*	5·0*	3·3*	5·0*
Jamaica Sugar Estates ..	181	187	133	143
Mean of both levels	184		138	

Experiment site	S/A		A/A	
	1·0*	2·0*	1·0*	2·0*
Vale Royal	107	113	105	107
Mean of both levels	110		106	

* S/A = sulphate of ammonia, A/A = aqueous ammonia—the suffix is the rate of application in cwt. equivalent sulphate of ammonia per acre.

† Frome—Village is excluded from the average as no unfertilized plots were in this trial.

TABLE XI

CANE YIELD RELATIVE TO CONTROL AT 100

Experiment sites	Sulphate of Ammonia	Aqueous Ammonia
Farm 2—Section 3	108	96
Caymanas—1, 2, 3 Top ..	111	102
Dawkins 15a and 15b ..	124	110
Farm 2—Section 21	157	147
Farm 2—Section 4	118	112
Mean	124	112
Effect of aqueous ammonia relative to sulphate of ammonia	50%	

in 5·0 tons more cane per acre without *any* detrimental effects upon juice quality. It was also shown that sulphate of ammonia was just as effective applied in this way, as was an equivalent amount of urea. The leaf composition of plots illustrated in Figure 11 shows the order of boost in leaf N to be expected, the similarity between the sulphate of ammonia and the urea treatment effects, and the reason why cane juice quality did not suffer—the nitrogen status of the plants which received extra nitrogen being similar to the control plants, at time of reaping.

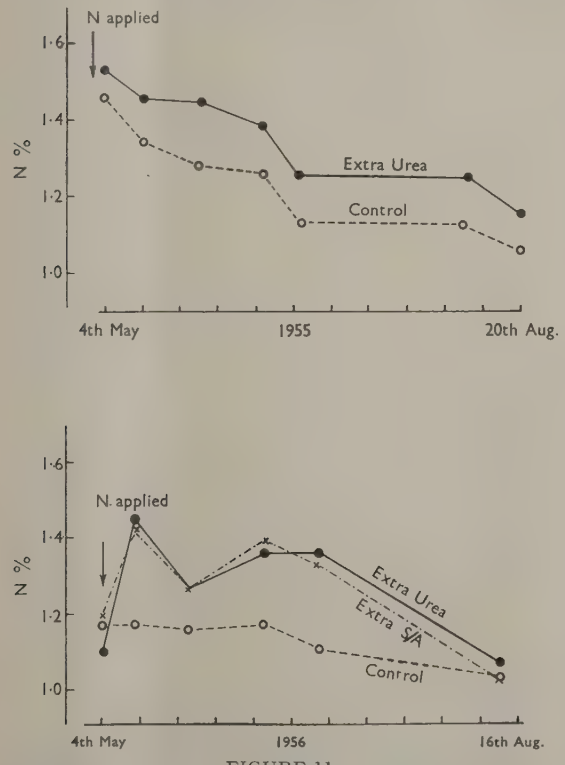

FIGURE 11

The influence of late applied N on the composition of leaf dry matter

For the 1957 crop, Richmond-Llandovery will put the late application of nitrogen into commercial practice.

The work was also extended to a fairly large plot trial at Sevens on ratoon cane where nine pairs of plots were used, each plot being about four-fifths of an acre. On one plot of each pair, 2·5 cwt. sulphate of ammonia per acre were applied at 6 months age, the other plot receiving no extra fertilizer. Eight of the nine pairs of plots showed an appreciable response to late nitrogen application whilst the ninth pair showed no difference in yield. The overall gain in sugar yield was 14%.

To augment the data, two formal experiments were laid out at Appleton during the year, whilst at Frome, ten fields each received three blocks of a late nitrogen experiment, and late nitrogen plots were placed on another 58 fields. All plots have been leaf sampled and the samples analysed regularly. Markedly deeper green colouring is evident on most of the late fertilized plots.

Crop logging

Very wide variation exists on most estates in the relative productivity of different fields. It is important to understand why this is and to make certain that it can, or cannot, be controlled economically, at will. A sample of abnormally good fields and abnormally poor fields was carefully selected. In any case, logs of abnormally good fields will, in themselves, be of the greatest interest, especially since such fields occur over such a wide range of ecological conditions. One hundred and forty fields have been selected as follows:—

Appleton	3	Richmond-Llandovery	10
Barnett	10	Rose Hall	10
Bernard Lodge ..	10	Serge Island	10
Frome	20	Sevens	10
Holland	3	United Estates ..	10
Monymusk ..	20	Vale Royal	10
New Yarmouth ..	4	Worthy Park ..	10

Paired plots have been marked on each field and a plot in each pair given an extra dressing of complete fertilizer. Leaf and sheath samples as well as growth measurements are taken when the cane is 4, 5, 6, 7·5, 9 and 10·5 months of age. An analysis of the data will not be possible until 1957–58.

Trace elements

A trace element survey of cane tissue interpreted in the light of standards determined elsewhere, showed that there is little cause to suspect that trace element deficiencies are a cause of yield reduction in Jamaica (see Annual Report, 1954). Nevertheless, in order to make very sure, a start has been made into incorporating trace element treatments into routine fertilizer experiments. Experiments of this kind were laid out during the year at Caymanas and Vale Royal and this programme will be extended in the future.

Urea *v.* sulphate of ammonia as a source of nitrogen

The current price per unit of urea is fast approaching that of sulphate of ammonia, and since coated urea no longer suffers the storage disadvantages of crystal urea, the more concentrated fertilizer may well offer advantages where transport and storage space are considerations. A series of experiments was laid out during the year to compare the results obtained from equivalent dressings of urea and sulphate of ammonia applied at three levels each. The results should be available during 1957.

Fertilizer and allied field experiments

The volume of work in progress is given in summary form in Table XII:—

blocks of each 3 x 3 x 3 trial have been placed on different fields. In all, 92 dispersed blocks were reaped during the year, distributed as follows:—

High rainfall areas	18
Low rainfall areas	8
Medium rainfall areas ..	6
Irrigated estates	60

At the time of writing this report, consideration is being given to a policy of combining field experiments with leaf sampling so as to measure yield response to fertilizer treatment on a very much greater number of fields but in association with leaf analysis, so that leaf analytical advice may be based not only on levels of plant food in the tissues but also on response in such levels to fertilizer treatment.

TABLE XII

No. and Distribution of Fertilizer Experiments in Operation during 1956

	Fall Plants			Spring Plants		Ratoons				Total	No. of fields with Crop Log Plots
	Planted 1954	Planted 1955	Planted 1956	Planted 1955	Planted 1956	Reaped 1956			To be reaped 1957†		
	Reaped 1956	To be reaped 1957	To be reaped 1958	Reaped 1956	To be reaped 1957	1st	2nd	3rd			
Northern Division:											
Barnett	–	–	–	–	–	–	2	2	1*	5	10
Hampden	–	–	–	–	–	–	–	–	–	–	–
Long Pond	2	1	–	2*	–	–	1	–	–	6	–
Richmond-Llandovery ..	–	–	–	2*	–	5	–	–	–	7	10
Rose Hall	–	–	–	1*	–	1	–	–	2*	4	10
Vale Royal	–	–	1	–	–	2	–	–	–	3	10
Central Division:											
Appleton	–	–	–	6*	3	–	1	–	2	12	3
Frome	–	–	–	1	–	4	1	–	–	6	20
Holland	–	–	–	–	–	–	1	–	–	1	3
Monymusk	–	1	–	17*	1	–	1	–	–	20	20
New Yarmouth	–	–	–	–	–	–	–	–	–	–	4
Sevens	1	–	–	–	4	–	–	–	–	5	10
Eastern Division:											
Bernard Lodge	–	–	–	1*	2	–	–	–	–	3	10
Caymanas	–	–	–	–	3	5	–	–	–	8	–
Gray's Inn Central ..	–	–	–	–	–	–	–	–	–	–	–
Innswood	–	1	–	–	1	–	–	–	–	2	–
Jamaica Sugar Estates ..	–	–	–	1	–	–	2	–	5	8	–
Serge Island	–	–	–	1	–	–	–	–	–	1	10
United Estates	–	–	1	–	1	–	4	–	–	6	10
Worthy Park	–	–	–	2*	2	–	–	–	1	5	10
Totals	3	3	2	34	17	17	13	2	11	102	140

Note.—In the above table, the dispersed block experiments marked* (consisting of three blocks each) have been counted as one experiment.

† Experiments laid out on ratoon fields.

During the year the trend to "fragment" experiments and to disperse blocks on to different fields was continued. Formal experiments are of necessity confined to only a small proportion of the total cane area and their results may not necessarily apply to all areas. In order to obtain a wider coverage of fields, individual

F. RIPENING OF SUGAR CANE

Preliminary examination of the effect of irrigating cane immediately prior to cutting, i.e. after the crop has been dried off in preparation for reaping, shows that the purity is slightly improved but it is doubtful

on the evidence obtained, whether the practice is worthwhile commercially.

Australian workers have reported an improvement in juice quality of cane treated with maleic hydrazide prior to harvest. Work of a similar kind was carried out at Richmond-Llandovery, and although slightly improved juices were obtained, the results are strictly inconclusive.

G. TILLAGE AND CULTURAL PRACTICES

Tillage operations can be divided into three broad categories, viz. pre-planting land preparation, post-planting, plant cane cultivation and ratoon cultivation. The number and distribution of experiments in operation during 1956 to test the economics of some of these operations are set out in Table XIII:—

TABLE XIII

No. and Distribution of Cultivation and Similar Trials in Operation During 1956

	Fall Plants			Spring Plants		Ratoons				
	Planted 1954	Planted 1955	Planted 1956	Planted 1955	Planted 1956					
	Reaped 1956	To be reaped 1957	To be reaped 1958	Reaped 1956	To be reaped 1957	Reaped 1956			To be reaped 1957*	Total
						1st	2nd	3rd		
Northern Division:										
Hampden	1	1	–	1	–	–	–	–	1	4
Long Pond	–	–	–	–	–	1	–	–	–	1
Richmond-Llandovery	–	–	–	–	–	3	–	–	–	3
Vale Royal	–	–	–	1	–	1	–	–	1	3
Central Division										
Appleton	1	–	–	1	–	2	–	1	1	6
Frome	–	–	–	4	20	4	–	–	1	29
Monymusk	–	–	–	–	1	–	–	–	–	1
Eastern Division:										
Caymanas	2	–	–	–	–	–	1	–	–	3
Innswood	–	–	–	1	–	1	–	–	–	2
Jamaica Sugar Estates	–	–	–	2	–	1	–	–	–	3
Serge Island	–	–	–	–	–	3	–	–	–	3
United Estates	–	–	–	1	–	1	–	–	–	2
Worthy Park	–	–	–	1	–	2	–	–	–	3
Totals	4	1	–	12	21	19	1	1	4	63

* Laid out on ratoon fields

The value of subsoil ripping and knifing treatments

In areas of heavy clay subsoils, knifing to a depth of 15 in. is normally carried out with the object of creating a temporary, cloddy structured layer through which water may move freely, laterally. The duration of these effects are as much dependent on the nature of the clay as on its moisture content at time of working and the nature of the tool used. To date, there is little known about the degree to which cultivation of this kind is beneficial, particularly the depth to which shattering should be carried out. Road rippers have been seen in operation, but without any records of measured beneficial effects. Investigations are in process both at Appleton and Frome to compare the value of "ripping" and "knifing" heavy clays. At Frome, harrowing alone was also compared as well as cross knifing and cross ripping. The results so far indicate that ripping or knifing is better than harrowing alone but that no difference exists in the value of the two subsoil operations. Cross ripping and cross knifing produced no extra benefits. At Appleton, ripping was superior to other treatments.

Similar investigations have been in operation at Worthy Park, where two depths of knifing have been used instead of ripping and knifing. The best plant cane yields were obtained from the deepest tilled plots.

The value of subsoil inversion by deep ploughing

A considerable area of cane occupies shotty, ground water, lateritic soils, possessing heavy, structureless acid subsoils. Since these soils are unirrigated and in areas of uncertain rains, depth of root system is of very great importance. The drastic treatment of heavy subsoil ploughing, involving the inversion of much of the subsoil in the presence and absence of heavy marling, is being examined at Hampden. The plant cane results have been encouraging where ploughing and heavy marling have been carried out, but not where ploughing alone was practised.

Under somewhat similar but not quite as extreme conditions at Vale Royal, ploughing has become an established practice, and is carried out in such a way as to turn over a small proportion of subsoil at each ploughing. Experiments now in operation are showing that improved results can be obtained by ripping

instead, but that no benefit accrues from cross ripping as well.

Liming

The physical effects of liming clay soils are not properly understood nor can responses be predicted from any special soil examination. Apart from supplying calcium, having an influence on the microflora and organic matter of the soil and reducing soil acidity on many heavy clay soils, the addition of lime and especially an excess of calcium carbonate, causes soil structure to become mellow. Whenever subsoil cultivation is examined, it seems also worth while to examine the effects of adding and incorporating lime into the subsoil. The effect is under investigation at Frome, Appleton, Hampden, Worthy Park, Sevens and Monymusk. The plant cane results are available from the first four estates. No responses were obtained at Frome, whereas remarkable increases were obtained at Appleton, Hampden and Worthy Park. This work needs to be extended until a broader basis is obtained for examining whether or not, results can be predicted by some method of prior soil analysis.

The value of moulding plant cane in the absence of irrigation

The practice of moulding plant cane is claimed to be carried out for a variety of reasons—the inducing of early tillering prior to earthing and later the suppression of late tillering and the support of the base of the stalks as lodging approaches. B42231, B41227 and B4362 were examined with respect to the effects of moulding plant cane at Frome. The plant cane results suggest that moulding has little or no effect upon B41227, but an appreciable beneficial effect upon B4362; for B42231, the results were conflicting. In ratoons, the results were generally similar except that in B4362 in one trial, the beneficial results registered in plants, were missing.

The doubtful value of inter-row cultivation on irrigated alluvial soils

The practice of drawing a subsoil tyne preceded by a rolling disc coulter through the inter-row space of sugar cane immediately after harvest seems of doubtful value on *a priori* reasoning, yet the practice has attained estate importance in some areas. At Caymanas, both the above operations and inter-row cattle ploughing are practised. Two experiments carried out to measure the effects of these treatments compared with control, have shown that no benefit is to be obtained from ploughing and that there are no benefits from inter-row knifing—the effects if anything may even be adverse.

The value of inter-row forking ratoons

Given normal land use, i.e. without heavy smashing of beds by haulage transport, two experiments at Frome have shown that the benefits ascribed to inter-row forking are in doubt. This conclusion would agree with similar results reported from British Guiana.

Is it necessary to turn trash?

The results obtained at Frome and Vale Royal suggest that for B41227 and B4362, nothing is gained by turning trash in dry weather. These observations do not necessarily apply during conditions of a wet harvest.

Booting and trash stripping

The removal of dead trash from standing cane used to be carried out as a routine measure when final weedin was done. This operation which takes place during the autumn is gradually becoming obsolete. It has been reported that the practice improves juice quality. Our findings from two trials at Frome and one at Serge Island are that:—

(i) there is no improvement in juice quality;

(ii) yield effects vary according to variety.

B41227 gave better yields of cane when "booted" whereas no significant effects could be detected with B3439, B42231 and B4362.

Spacing

Row widths vary throughout the sugar industry ranging from 4 ft. in the dry North Coast to 6 ft. at Worthy Park. The number of tops per unit length of row and also the system of planting, i.e. whether straight or staggered, are different for different areas. These differences arose from experience and planting different varieties. With the introduction of newer varieties it became necessary to determine the optimum row widths and method of planting within the rows.

Row widths. Under the dry conditions prevailing in Trelawny and St. James, it has proved beneficial to plant cane at row widths as close as 4 ft., and in one trial at Vale Royal 3 ft. rows gave yields superior to wider spacings for B41227 and Co331. The higher rainfall and irrigated areas required wider row widths for the best results as was demonstrated in trials at Monymusk, Gray's Inn Central and Appleton. The most successful width of row under these conditions appeared to be 5 ft.

Number of tops per unit length of row. Trials conducted at Frome and Monymusk do not indicate any big differences in yield to be expected from planting 5,000 to 9,000 tops per acre for the three newer commercial varieties, but there is a tendency towards higher yields from 7,000 to 8,000 tops per acre.

Width of row and system of planting. The width of row and system of planting cane at Worthy Park differ from other estates in Jamaica. Row widths there are 6 ft. and cane tops are planted in a straight line on top of Louisiana banks. Two tops are planted about 4 in. abreast at intervals of 20 in. along the row. Work was initiated in the spring of 1954 to observe the effects of varying the row widths and also varying the method of planting within each row. For the plant crop 4 ft. rows gave the highest yields with 5 ft. rows a close second. Planting 1 ft. apart in the rows either straight or staggered at 18 in. across was the best

system. The first ratoon results presented a slightly different picture—5 ft. rows were undoubtedly the highest producers whilst 6 ft. row yields approached those of 4 ft. rows. The same conclusions however, hold for the system of planting within the rows, i.e. the closer spacing in plants giving way to the wider spacing in ratoons.

The influence of compaction by transport vehicles upon sugar cane yields

Investigations were commenced at Frome to measure the effects of hauling cane along "drawbeds" upon the yield of those beds. The relative effect of cattle *v.* tractor infield transport is being studied. To date, several plant cane fields have been laid out as uniformity trials in order that as successive harvests are reaped, the yield of "non drawbeds" *v.* "drawbeds" can be recorded as well as the increasing adverse effects of transport as one passes along the "drawbed" from the inner end to the end abutting on to the interval. The investigations were fortunate in their timing since the quality of land preparation in the spring was excellent, the weather and soil being very dry. The accumulated effects carried forward from previous transport vehicles should be a minimum.

At Sevens it was possible with the co-operation of the management to lay out a new area of the estate in a manner such that no transport vehicles need enter the cultivated parts of fields. Narrow transport intervals suitable for one-way traffic were cut across cane rows at intervals of two and two-third chains such that at reaping, cane can be thrown into windrows near these intervals. Irrigation is by "long line" method, the cane having been bank planted.

Infield drainage systems

Under conditions of heavy rainfall and/or heavy, clay soils conditions, different systems of drainage are used. These systems have evolved by methods of trial and error, based on the observations and experience of estate field personnel. A series of trials is being pursued to try and evaluate:—

(i) the optimum distance between drains;

and (ii) the relative merits of different land forms, and in particular between cambered beds and Louisiana banks.

Six such experiments were in operation to cater for the varying conditions as follows:—

Appleton—Big Grass 5 Appleton—Lane 5	High rainfall and heavy clay conditions
Hampden—Gales Valley	Medium rainfall and heavy clay conditions
Jamaica Sugar Estates— Golden Grove 8 and 32	High rainfall and relatively free draining soils
Vale Royal—Swanswick	Low rainfall and heavy clay conditions
Richmond-Llandovery— Richmond	Irrigated and heavy clay conditions

In each of these trials the practice adopted by the estate was included as the control.

The results to date indicate that there is little difference in the effect due to the various forms of drainage tried, and in general, the systems adopted by each estate on which the experiments were laid down, were as effective as the others being tested.

In high rainfall areas, drainage is essential even where the soil is relatively free draining, and the evidence indicates that although some benefit is obtained from having closely spaced drains, it may not be economic to place them more frequently than one-third chain apart.

H. VARIETIES

(1) Distribution

The cane reaped in 1956 was dominated by the varieties B41227, B4362 and B42231, which accounted for more than one-half of the acreage reaped, with B41227 accounting for about one-quarter of the total area. The trend in the relative area reaped in the different varieties is given in Table XIV and Figure 12.

The relative stress on different varieties according to ecological areas is shown in the analysis of plant cane acreage given in Table XV.

TABLE XIV

ACREAGE UNDER VARIETY % TOTAL ACREAGE REAPED 1952 TO 1956

Years	VARIETIES										
	B3439	B34104	B37161	B37172	B41227	B42231	B4362	POJ2878	Co331	Co421	Others
1952	22	48	6	8	1	2	1	1	—	—	11
1953	21	35	8	8	5	4	5	1	—	—	13
1954	18	26	8	8	10	7	10	1	—	—	11
1955	13	16	8	7	18	9	14	1	1	1	12
1956	9	11	7	7	24	10	18	1	1	1	11

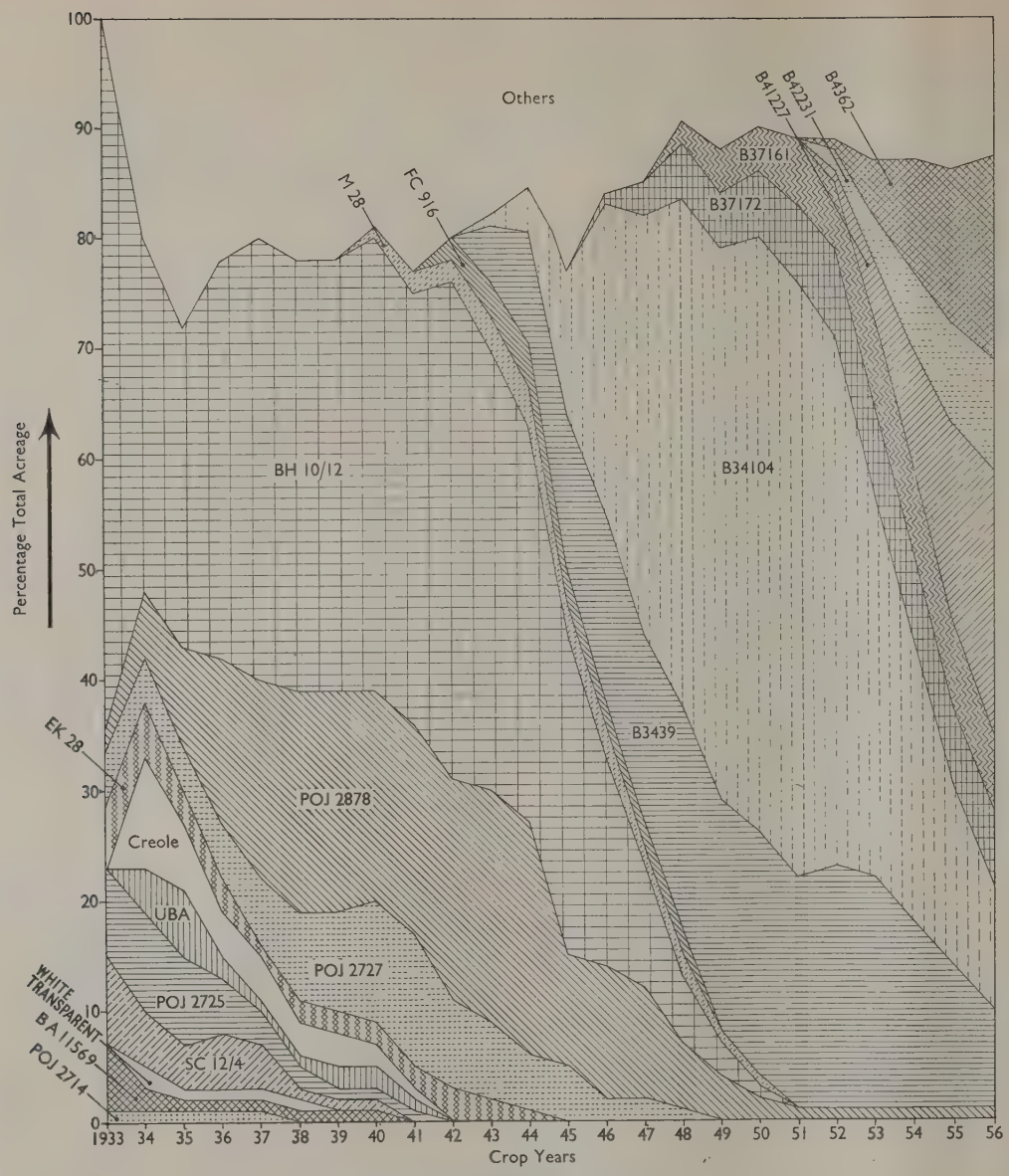

FIGURE 12
% Acreage under different varieties

TABLE XV
VARIETY PLANT ACREAGE % TOTAL PLANT ACREAGE REAPED IN 1956, FOR ECOLOGICAL AREAS

Ecological areas	Varieties									
	B3439	B37161	B37172	B41227	B42231	B4362	B47419	Co331	Co421	Others
Wet Western	—	—	—	58	4	32	—	2	—	4
Dry North Coast	2	8	—	22	3	19	—	20	12	14
Irrigated—Southern	1	—	—	41	34	10	2	1	—	11
Wet East Estates	1	—	27	12	3	55	—	1	—	1
Medium rainfall—Central ..	—	—	—	10	13	72	—	—	—	5

B41227 attains maximum popularity on irrigated estates whilst B4362 is very popular in areas with poorer juices such as Gray's Inn and Jamaica Sugar Estates. B37172 holds out on the wet, alluvial soils of Jamaica Sugar Estates only. The two Co varieties are difficult to replace on the ferruginous, ground water lateritic soils of the dry areas of Trelawny, even in spite of their high fibre and susceptibility to *Helminthosporium* attack. B37161 is now likely to be rapidly eliminated as a result of the trend to spring plants and its inability to compete with B41227 and B4362 in ratoons. The extent to which both B3439 and B37161 have deteriorated with respect to the more recent varieties is evident in many experiments.

(2) Performance

The productivity data set out in Table XVI clearly show the superiority of the newer varieties. The value of Co331 under Trelawny conditions is very evident in the figures. More detailed comparisons feature in Appendix I.

(3) Variety experiments

The number and distribution of variety experiments in operation during 1956 are given in Table XVII.

TABLE XVI

CWTS. SUGAR PER ACRE PER MONTH FOR VARIETIES BY ECOLOGICAL AREAS

Ecological areas	Varieties											Average
	B3439	B34104	B37161	B37172	B41227	B42231	B4362	POJ2878	Co331	Co421	Others	
Wet Western	5·1	5·1	5·9	5·6	7·0	6·9	7·3	5·4	4·6	7·8	5·5	6·5
Dry North Coast	5·1	4·6	5·3	4·8	5·7	6·6	5·6	4·8	5·8	5·4	4·7	5·2
Irrigated—Southern	6·6	6·0	6·5	5·3	7·1	6·5	7·6	6·1	6·0	6·0	6·5	6·8
Wet East Estates	5·7	5·2	5·6	5·9	5·9	5·7	5·8	—	3·0	—	5·8	5·8
Medium rainfall—Central ..	6·3	5·5	6·8	5·6	7·5	7·3	7·9	—	—	—	7·1	7·5
Overall Average	6·3	5·6	5·7	5·9	7·0	6·5	7·1	5·0	5·7	5·4	5·8	6·4

TABLE XVII

NO. AND DISTRIBUTION OF VARIETY EXPERIMENTS IN OPERATION DURING 1955

	Fall Plants			Spring Plants		Ratoons			
	Planted 1954	Planted 1955	Planted 1956	Planted 1955	Planted 1956	Reaped 1956			
	Reaped 1956	To be reaped 1957	To be reaped 1958	Reaped 1956	To be reaped 1957	1st	2nd	3rd	Total
Northern Division:									
Barnett	–	–	–	1	–	1	–	–	2
Hampden	2	1	2	–	–	–	–	–	5
Long Pond	2	–	–	–	–	2	1	–	5
Richmond-Llandovery	1	–	1	–	–	–	1	–	3
Rose Hall	1	–	–	–	–	1	–	–	2
Vale Royal	1	–	–	–	–	–	1	–	2
Central Division:									
Appleton	1	–	–	–	–	1	1	–	3
Frome	–	1	–	6	–	5	2	–	14
Holland	–	–	–	1	–	1	–	–	2
Monymusk	–	–	1	2	3	2	2	–	10
New Yarmouth	1	–	3	–	–	–	1	–	5
Sevens	–	–	1	1	–	1	–	1	4
Eastern Division:									
Bernard Lodge	1	–	–	1	–	–	–	–	2
Caymanas	1	2	–	–	–	–	–	–	3
Gray's Inn Central	–	2	–	–	–	2	–	–	4
Innswood	1	–	–	1	–	–	1	–	3
Jamaica Sugar Estates	–	1	–	1	2	1	–	–	5
Serge Island	–	–	–	2	–	–	–	–	2
United Estates	1	–	–	–	–	–	–	–	–
Worthy Park	–	–	–	1	–	–	1	–	2
Totals	13	7	8	17	5	17	11	1	79

(*a*) *Final stage experiments*

The results of final stage experiments are summarized in Table XVIII which gives the order of merit of the main varieties based upon their performance in all trials.

The B47' Series. Of this series B47258 and B47361 did best. The former would appear to have possibilities on heavy land, whilst the latter did quite well generally. B47419 is being grown on a field scale on some irrigated estates. It gives heavy yields of cane sugar demands and of incurring increased infield damage from transport (and perhaps mechanized cutting at some future date) it seems essential to determine whether cane can be made to grow successfully for 24 months and which varieties are most suitable for this purpose. Trials to be reaped in 1957 have been laid out at Vale Royal, Frome, Monymusk and Caymanas and one, to be reaped in 1958, at Jamaica Sugar Estates.

Whilst it is confidently expected that cane can be kept in an active growing state for two years on

TABLE XVIII

SUMMARY OF FINAL EXPERIMENTS

No. of times varieties placed in first five (based on sugar yields)

Varieties	Irrigated		Wet West		Wet East		Central		North Coast		Overall average
	Plants	Ratoons	Plants	Ratoons	Plants	Ratoons	Plants	Ratoons	Plants	Ratoons	
B47258	3 (5)	1 (2)	2 (5)	– (–)	1 (3)	– (–)	– (–)	– (–)	2 (2)	– (–)	9 (17)
B47306	– (–)	– (–)	0 (5)	– (–)	1 (3)	– ( )	– ( )	– ( )	1 (2)	– ( )	2 (10)
B47310	1 (3)	0 (1)	– (–)	– (–)	– (–)	– ( )	– (–)	– (–)	– (–)	– (–)	1 (4)
B47361	2 (3)	0 (1)	– (–)	1 (1)	– ( )	– (–)	– (–)	– (–)	– (–)	1 (1)	4 (6)
B51402 (A26) ..	3 (4)	*1 (1)	0 (1)	– (–)	0 (1)	– (–)	– (–)	– (–)	1 (1)	– (–)	5 (8)
B51403 (A32) ..	2 (3)	1 (1)	– (–)	– (–)	– (–)	– (–)	– ( )	– (–)	– (–)	– (–)	3 (4)
B51407 (E150) ..	1 (4)	1 (1)	– (–)	– (–)	0 (1)	– (–)	– (–)	– ( )	– ( )	– (–)	2 (6)
B51410 (E162) ..	2 (3)	1 (1)	2 (5)	– (–)	1 (2)	– (–)	– (–)	– (–)	1 (2)	– (–)	7 (13)
B51411 (E168) ..	0 (5)	*1 (2)	1 (5)	– (–)	*1 (3)	– (–)	– ( )	– (–)	0 (2)	– (–)	3 (17)
B51413 (F364) ..	2 (4)	0 (1)	– (–)	– (–)	– (–)	– ( )	– (–)	– ( )	– (–)	– (–)	2 (5)
B51414 (G483) ..	2 (5)	1 (2)	4 (5)	– (–)	*2 (3)	– (–)	– (–)	– ( )	0 (2)	– (–)	9 (17)
B51415 (H444) ..	– (–)	– (–)	4 (5)	– (–)	*2 (3)	– (–)	– (–)	– (–)	†2 (2)	– (–)	8 (10)
B51418 (I216) ..	1 (5)	0 (2)	2 (5)	– (–)	1 (3)	– ( )	– ( )	– (–)	0 (2)	– (–)	4 (17)
B51419 (J284) ..	1 (3)	0 (1)	– (–)	– (–)	– (–)	– (–)	– (–)	– (–)	– (–)	– ( )	1 (4)

Figures in brackets represent number of trials in which included.

* Significantly outyielded standards.

but a relatively inferior juice; the variety has been included in long growing (two-year) trials, the results of which will be available next year. B47258 and B47386 have also been included in long season trials at Jamaica Sugar Estates. On the whole, the more promising of the B47' series may perform on a general level with our commercial varieties but are unlikely to prove superior.

The B51400 *series* (= 1st 500). Twenty-three of these varieties featured in final trials reaped during the year. The performance of the leading varieties is given in Table XVI. Of these, the most promising are B51414 (G483), which is a very vigorous cane but with late ripening characteristics, and B51415 (H444) which has by far the best juice quality of the series, but gives some trouble with germination. The testing of these varieties as long season canes began during the year; B51414, B51417 and B51418 having been included in the trials; these three varieties were also made available during the year for exchange to other B.W.I. territories.

Long season experiments. Under irrigated conditions it has been demonstrated in Jamaica as elsewhere, that the relationship between yield of sugar per acre and age of cane at reaping is linear up to an age of 17 months at least. With the possibility of fluctuating irrigated estates, it is problematical whether this can be effectively delivered under natural rainfall conditions. The effects of standing over cane from one harvest to the next are being investigated and particularly with respect to variety influences. Particular attention is being paid to the performance of varieties known to stand two years growth elsewhere, such as the Hawaiian varieties and NCo cane from South Africa.

(*b*) *Lattice experiments*

The lattice trial results are summarized in Table XIX.

The B49' Series (Ratoons). None of this series has proven outstanding. The best are B49198 which is vigorous, poor in juice quality and slightly mosaic susceptible; B49353 vigorous and with good juice but very susceptible to Pokkah Boeng; and B49396. These three will be tested in final trials, of which four were planted during the year. B49119 which was received after the seedlings discussed above, has performed well in the nurseries and will be included in final trials. Unfortunately, it is unlikely to be recommended for commercial production because of its susceptibility to mosaic.

TABLE XIX

Summary of Lattice Trials

No. of times varieties placed in first five (based on sugar yields)

Varieties	Irrigated		Wet West		Wet East		Central		North Coast		Overall average
	Plants	Ratoons	Plants	Ratoons	Plants	Ratoons	Plants	Ratoons	Plants	Ratoons	
B49198	1 (3)	– (–)	– (–)	0 (2)	0 (1)	0 (1)	– (–)	– (–)	1 (2)	1 (1)	3 (10)
B49353	2 (3)	– (–)	– (–)	0 (2)	0 (2)	1 (1)	– (–)	– (–)	0 (1)	– (–)	3 (9)
B49396	0 (3)	– (–)	– (–)	1 (1)	0 (1)	1 (2)	– (–)	– (–)	1 (2)	1 (1)	4 (10)
B52405	0 (1)	– (–)	– (–)	1 (2)	0 (1)	0 (2)	– (–)	– (–)	*2 (2)	1 (1)	4 (9)
B52406	– (–)	– (–)	– (–)	0 (2)	– (–)	1 (2)	– (–)	– (–)	0 (1)	0 (1)	1 (6)
B52407	0 (1)	– (–)	– (–)	2 (2)	– (–)	0 (2)	– (–)	– (–)	0 (1)	0 (1)	2 (7)
B52408	– (–)	– (–)	– (–)	0 (2)	– (–)	1 (1)	– (–)	– (–)	1 (2)	0 (1)	2 (6)
B52409	0 (1)	– (–)	– (–)	1 (1)	– (–)	0 (1)	– (–)	– (–)	*1 (1)	1 (1)	3 (5)
B5014	1 (2)	– (–)	– (–)	1 (1)	1 (1)	– ( )	– (–)	– (–)	– (–)	– (–)	3 (4)
B5037	0 (2)	– (–)	– (–)	1 (1)	2 (2)	1 (1)	– (–)	– (–)	– ( )	– (–)	4 (6)
B50153	1 (3)	– (–)	– (–)	0 (1)	0 (1)	1 (1)	– (–)	– (–)	– (–)	– (–)	2 (6)
B50155	1 (1)	– (–)	– (–)	– (–)	– (–)	– (–)	0 (1)	– (–)	– (–)	– (–)	1 (2)
B50347	2 (2)	– (–)	– (–)	0 (1)	0 (1)	– (–)	– (–)	– (–)	– (–)	– (–)	2 (4)
May336	– (–)	– (–)	– (–)	1 (1)	– (–)	0 (2)	– (–)	– (–)	1 (2)	1 (1)	3 (6)
M134/32	0 (3)	– (–)	– (–)	0 (2)	1 (1)	0 (1)	– (–)	– (–)	0 (1)	– (–)	1 (8)
M112/34	1 (3)	– (–)	– (–)	0 (1)	0 (1)	1 (2)	– (–)	– (–)	0 (1)	– (–)	2 (8)
NCo310	3 (3)	– (–)	– (–)	0 (1)	0 (1)	0 (1)	1 (1)	– (–)	– (–)	– (–)	4 (7)
B5121	– (–)	– (–)	1 (1)	– (–)	– (–)	– (–)	0 (1)	– (–)	– (–)	– (–)	1 (2)
B51131	– (–)	– (–)	1 (1)	– (–)	– (–)	– (–)	*1 (1)	– (–)	– (–)	– (–)	2 (2)
B51134	– (–)	– (–)	0 (1)	– (–)	– (–)	– ( )	0 (1)	– (–)	– (–)	– (–)	0 (2)
B51374	– (–)	– (–)	0 (1)	– ( )	– (–)	– (–)	0 (1)	– (–)	– (–)	– (–)	0 (2)
3/21	– (–)	– (–)	1 (1)	– (–)	– (–)	– (–)	1 (1)	– (–)	– (–)	– (–)	2 (2)
3/172	– (–)	– (–)	1 (1)	– (–)	– (–)	– (–)	1 (1)	– (–)	– (–)	– (–)	2 (2)
3/287	– (–)	– (–)	0 (1)	– (–)	– (–)	– (–)	0 (1)	– (–)	– (–)	– (–)	0 (2)
3/311	– (–)	– (–)	1 (1)	– (–)	– (–)	– ( )	0 (1)	– (–)	– (–)	– (–)	1 (2)
3/365	– (–)	– (–)	1 (1)	– (–)	– (–)	– (–)	1 (1)	– (–)	– (–)	– (–)	2 (2)

Figures in brackets represent number of trials in which included.

* Significantly outyielded standards.

The B52400 series (= *2nd* 500) (Ratoons). Four varieties, viz. B52405, B52407, B52408 and B52409 have shown promise but unfortunately, all except B52405 are slightly susceptible to mosaic. All four are being tested further.

The B50' series (Plants). B5037 and B50347 were planted in final trials during the year. Any others to be carried forward will be selected after the ratoon results are available. B50155 has succumbed to mosaic and so, unfortunately, has B5037.

Foreign varieties. NCo310 has been outstanding in propagation plots but unfortunately, on heavy land at Frome and Bernard Lodge its ratooning was definitely mediocre, giving the appearance of ratoon stunting without any visual internal symptoms.

The Australian varieties Ajax, Comus, Eros, Pindar and Trojan all developed mosaic. Eros and Pindar were the most promising but Trojan was so badly affected with mosaic as to completely nullify its early promise.

In two experiments at Monymusk H37/1933 was outstanding in cane yields but sucrose % juice was so low as to render its sugar yields inferior to those of B41227.

The B51' Series (Barbados selections) (Plants). Although the majority of the lattices with these varieties will be reaped in 1957, two were reaped in 1956 at Frome and Worthy Park, in which B5121, B51131, B51134 and B51374 did at least as well as the standard cane. *Of these, B51131 appears to be outstanding and is worthy of accelerated testing.*

The B51400 series (= *3rd* 500) (Plants). These are bulk selections from the Barbados 1st year seedling trials reaped in 1951, and so were bred in the same year as the 1st 500 series which however, were selected from the seedling nurseries. Five varieties have shown promise.

The B52' series. Fall lattice experiments dealing with this series were planted during the year. The spring lattices will be planted in 1957.

The B52400 series (= *4th* 500). The selections of this group were included in the same lattices as the B52' series.

(4) Pre-Lattice propagation

To meet the heavy demands for planting material and in order to have it near at hand, regional propagation nurseries have been established at Barnett, Frome, Monymusk, Caymanas and Jamaica Sugar Estates. These nurseries will afford yet another opportunity of assessing the new varieties before they are put into lattice experiments, especially their reaction to pests and diseases in the different ecological areas. During

the year varieties of the following groups were propagated:—

B49119, B51129, 17 B52' series, 32 B52400 series, 55 BJ54 series, 10 B53' series, D62/43, PR902, Pepecuca, H32/1063 and H39/7028.

(5) Pre-lattice selection programme

(a) Quarter chain row nursery trials

B53' series. Twenty-eight varieties were selected for testing in quarter chain row nursery trials. The lattices were planted at Monymusk, Frome, Jamaica Sugar Estates and Caymanas. Ten of the Barbados second year seedling trial selections (also B53's) are being propagated for lattice trials.

BJ56' series. Thirty-three varieties have been selected for further work.

(b) Five stool nurseries

B54' series. Nine hundred and fourteen varieties of this series are undergoing selection at Jamaica Sugar Estates, Monymusk, Long Pond and Frome.

BJ57' series and Hawaiian crosses. Of the 14,320 seedlings planted in the nurseries at Caymanas and Frome, 205 varieties were selected during the year, the details of which are given in Table XX:—

nurseries at Frome, Sevens and Jamaica Sugar Estates from Barbados and Hawaiian fuzz which was germinated in January and February of 1956. The Hawaiian fuzz from which the seedlings were raised, was kindly supplied by the Genetics Department of The Experiment Station of the Hawaiian Sugar Planters' Association. Germination and breeding details are given in Table XXI. Field observations indicate that the Hawaiian crosses are much more uniform in vigour and much more susceptible to Pokkah Boeng than the Barbados crosses.

(d) New introductions of sett material

B56' series (Barbados selections). One hundred and fourteen varieties were introduced at the end of the year.

Barbados parent varieties. Fifty of the parent varieties used in Barbados were received. The material is being multiplied at Caymanas for final testing at Jamaica Sugar Estates against Chlorotic Streak and at Long Pond against Eye Spot. All plants have withstood inoculation with mosaic.

Foreign varieties. During the year material of the following varieties was received from sources other than

TABLE XX

SEEDLING SELECTIONS FROM BJ57' SERIES AND HAWAIIAN CROSSES

Cross	Parentage	Number in nursery			Number selected			% selected	
		Caymanas	Frome	Total	Caymanas	Frome	Total	Caymanas	Frome
1	B50196 x B47419 ..	10	14	24	—	—	—	—	—
2	B43283 x POJ2878	32	35	67	—	2	2	—	5·7
3	B5011 x B47419 ..	109	120	229	4	—	4	3·7	—
4	B49372 x B45151 ..	364	376	540	14	—	14	3·8	—
5	B43283 x B41227 ..	336	371	707	1	4	5	0·3	1·1
6	B46103 x B41227 ..	13	12	25	—	—	—	—	—
7	B47179 x POJ2878	59	63	122	1	3	4	1·7	4·8
8	B5037 x B42231 ..	36	35	71	—	—	—	—	—
9	Co421 x B47419 ..	1072	1232	2304	27	22	49	2·5	1·8
10	PR1000 x B41227 ..	50	60	110	1	2	3	2·0	3·3
11	B35207 x POJ2878	145	133	278	5	5	10	3·4	3·8
12	B4362 x Co419 ..	54	56	110	1	1	2	1·9	1·8
13	B46288 x B42231 ..	21	14	35	—	—	—	—	—
14	B4362 x B41227 ..	6	7	13	1	—	1	16·7	—
15	B45170 x POJ2878	7	7	14	—	1	1	—	14·3
16	B50184 x B46136 ..	9	14	23	—	—	—	—	—
17	B44111 x B41227 ..	73	98	171	1	—	1	1·4	—
18	H41/3340 x ? ..	1620	2480	4100	36	8	44	2·2	0·3
19	H32/8705 x ? ..	48	42	90	1	—	1	2·1	—
20	B4362 x ? ..	4	0	4	—	—	—	—	—
21	H40/1184 x ? ..	2315	2768	5083	32	32	64	1·4	1·2
Total		6383	7937	14320	125	80	205	2·0	1·0

(c) Single stool nurseries

B55' series. Three hundred and thirty-nine varieties are being propagated at Caymanas, of which 18 have contracted mosaic. The remainder will go into the five-stool nursery trials early in 1957.

BJ58' series and Hawaiian crosses. Nine thousand eight hundred and seven seedlings were planted in

Barbados, all being introduced through the Plant Quarantine Station in Trinidad:—

From U.S.A.	F31/962
From India	Co313, Co360 and Co413

(e) Distribution to estates of varieties from sources other than Barbados

Twenty-eight clones were sent to all estates for

TABLE XXI

FUZZ RECEIVED FROM BARBADOS (BJ57' SERIES) AND FROM HAWAII

Parentage	Greenhouse					Planted in Nurseries			
	Number potted	Weak	Died	Developed mosaic	Total discarded	Frome	J.S.E.	Sevens	Total
From Barbados:									
B43349 x B47320	295	2	28	—	30	133	12	120	265
B35207 x POJ2878	119	—	—	3	3	48	5	63	116
H32–8560 x B45151	914	4	107	48	159	399	40	316	755
H32–8560 x B4098	183	2	—	12	14	80	8	81	169
H32–8560 x B34104	243	6	5	61	72	89	8	74	171
B4431 x H32–1063	4	—	—	—	—	4	—	—	4
POJ2878 x B41227	486	9	11	56	76	197	16	197	410
POJ2878 x B4362	999	60	46	84	190	399	40	370	809
POJ2878 x B34104	681	12	21	195	228	304	30	119	453
B37161 x POJ2878	250	3	3	12	18	120	12	100	232
B37161 x H37–1933	264	4	11	149	164	80	8	12	100
B37161 x B41211	115	3	4	—	7	40	4	64	108
B37172 x B41227	50	—	4	1	5	24	2	19	45
B4362 x H37–1933	366	4	7	107	118	133	12	103	248
B4362 x POJ2878	537	11	5	20	36	252	25	224	501
B42279 x B4098	537	7	3	18	28	240	24	245	509
B5037 x B41211	1360	22	34	176	232	623	56	449	1128
F38–819 x B4744	35	—	—	3	3	14	2	16	32
B39254 x B37193	90	5	11	6	22	40	4	24	68
B39254 x B49119	60	—	—	2	2	31	3	24	58
B45152 x H37–1933	85	—	2	39	41	36	4	4	44
B37329 x B47419	69	2	2	2	6	28	3	32	63
B50352 x POJ2878	15	—	1	—	1	7	—	7	14
Co421 x NCo330	251	1	1	6	8	98	10	135	243
M134/32 x B45151	309	1	2	8	11	133	12	153	298
B37161 x NCo310	1	—	—	—	—	1	—	—	1
B4373 x B42231	88	3	—	2	5	35	4	44	83
B42279 x B43337	331	7	1	96	104	133	12	82	227
B51131 x B4098	147	—	2	26	28	56	5	58	119
B3353 x B42231	45	—	1	5	6	21	2	16	39
B51259 x B4098	276	1	3	87	91	133	12	40	185
B5142 x B4098	25	—	—	3	3	10	1	11	22
B5098 x POJ2878	84	—	—	47	47	24	2	11	37
B38233 x B4098	163	3	3	51	57	60	6	40	106
B50215 x B42231	202	1	—	46	47	80	8	67	155
B52184 x B4098	14	—	8	1	9	—	—	5	5
B37161 x B51134	43	—	—	28	28	9	1	5	15
POJ2364 x B417	83	1	2	35	38	24	2	19	45
Sub-Total	9819	174	328	1435	1937	4138	395	3349	7882
From Hawaii:									
H40–1184 x ?	660	—	8	151	159	266	—	235	501
H41–3340 x ?	245	—	6	10	16	119	—	110	229
H44–2364 x ?	1195	—	2	99	101	557	—	537	1094
H47–2060 x ?	154	—	9	44	53	51	—	50	101
Sub-Total	2254	—	25	304	329	993	—	932	1925
Total	12073	174	353	1739	2266	5131	395	4281	9807

propagation and observation prior to inclusion in experiments; they were:—

Country of origin	Varieties
Australia	Q28, G176, Comus, Eros, Pindar and Trojan
Cuba	CC101, CC102, Gloria 49/1
Hawaii	H32/8560, H37/1933, H38/2915, H38/4443, H39/3633, H39/5803 and H44/3098
South Africa	NCo310, NCo330 and NCo339
Mauritius	Ebene 1/37, M34.32, M213/40, M112/34
Puerto Rico	PR905, PR1000
U.S.A.	CL41/223

Observations coming in suggest that many of these are not worth further trial, e.g. M112/34, M134/32, M213/40, PR1000, CC101, Gloria 49/1, Co352, CL41/223 and Co432. The Australian canes as well as H32/8560, H37/1933, H44/3098, NCo339, M112/34, Ebene 1/37 and CC102 are mosaic susceptible.

I. DISEASES

Observation nurseries

The five-stool and quarter chain variety nurseries afford an opportunity of assessing seedling reactions to the principal diseases in the field. In addition to these, a special nursery has been started at Long Pond in

which to test potential commercial varieties against Eye Spot as well as their reaction to ratoon stunting disease. At Jamaica Sugar Estates, Barbados "selfs" and samples of the 1956 Jamaica seedling populations have been planted in fields normally heavily infected with Chlorotic Streak as part of a search for resistant lines.

Eye Spot (*Helminthosporium sacchari*)

The incidence of this disease continued to be heavy at Long Pond, Vale Royal, Hampden and Gray's Inn Central. In many areas in Trelawny the loss of active leaf surfaces immediately prior to harvest is extremely severe. The disease must be very adversely affecting yields and juice quality.

Mosaic

The routine policy of inoculating seedlings in the greenhouse was continued. Many estates seem keen to plant some of the newer varieties which show slight susceptibility to mosaic. The temptation must be carefully watched and the plants of any substantial acreage of mosaic susceptible varieties avoided.

Chlorotic Streak

Experiments were reaped as ratoons at Worthy Park and Jamaica Sugar Estates to determine the effect of Chlorotic Streak upon the yield of B4362. The ratoon results confirmed plant cane observations, viz. that the disease has a marked effect upon the productivity of a susceptible variety like B4362. In 1st ratoons however, the effect of treatments (clean material, clean-heat-treated material and diseased-heat-treated material) had been reduced to 55 and 57% of their effects in plant cane, in the two experiments respectively. Whereas the average effects of treatments in plant cane was 49% at Jamaica Sugar Estates and 18% at Worthy Park of the yields of the plots planted with diseased material, in 1st ratoons the figures were 27% and 10% respectively. The ratoon yields show little to choose between the three treatments other than "diseased planting material," suggesting that the rate of reinfection had been constant and that in the circumstances heat treatment of planting material was highly effective and of quite important commercial value. Over two crops, the mean effect of the disease control treatments was to increase production per acre by 3·0 (Jamaica Sugar Estates) and 1·6 (Worthy Park) tons sugar. At Worthy Park secondary infection as revealed by inspection for symptoms, remained low.

Ratoon Stunting

1st ratoon results of an experiment at Long Pond have shown that the disease became much more serious in ratoons than in plants, reducing the yield of cane in Co421 by 29% compared with only 12% in plants. Heat treatment produced an improvement of only 13% in ratoons, showing that the treatment was either ineffectively carried out or that secondary spread was high.

Material of 23 of the most promising varieties has been planted in the form of a series of 23, 4 x 4 Latin Squares to test the effects of the treatments—normal setts, normal setts inoculated, heat treated setts and heat treated setts inoculated.

A survey of the incidence of ratoon stunting disease at Richmond-Llandovery was abandoned following the poor germination of heat treated setts.

Leaf Scald (*X. albilineans*)

The Plant Quarantine Officer in Trinidad claims that plants of B51414 grown from setts of the material sent from Jamaica developed the early external symptoms of Leaf Scald. The original stools from which the setts were obtained were symptomless and have remained so, as also has B34104 "bank" cane in the same area in spite of the fact that B34104 is very susceptible to the British Guiana Leaf Scald. It is suspected that Mottle Stripe (*X. rubrisubalbicans*) may have been to blame, since its incidence is widespread in Jamaica. Samples of Mottle Stripe have been sent to Dr. Dowson at Cambridge who is working on *X. albilineans*.

J. PESTS

West Indian Cane Fly (*Saccharosydne saccharivora*)

The commercial control of this pest by the use of D.D.T. sprays was claimed by field operators to be less effective than formerly. Spraying trials with D.D.T., Endrin and Malathion confirmed that the pest had grown tolerant to D.D.T. but that it was extremely sensitive to Endrin and Malathion. Some indication was obtained that the beneficial effects of Malathion were more lasting than those of Endrin. The insecticides were applied as a spray at 1·5 pint per acre of Endrin and 1·3 pint per acre of Malathion. Spraying by knapsack sprayer in 20 gal. of water per acre was also found to be as effective as mist spraying.

Nematodes

An area of cane at Worthy Park on fertile soil of good structure, has produced very disappointing yields, both as plants and as ratoons. Stool height and vigour vary greatly even within short distances. Affected cane is thin and the root system stunted and without branching. Roots end in callouses. Significant responses to heavy applications of nitrogen and potash have been measured but these are interpreted as merely catering to a defective root system. Affected areas are very sensitive to drought. The condition has been noted on other plant cane fields planted in the spring of 1956. The growth response obtained to applications of 40 gal. (U.S.) per acre of D.D. (1,3-dichloropropylene and 1,2-dichloropropane) has been phenomenal. Typical affected stools and "healthy" stools are illustrated in Figure 13, whilst Figure 14 gives some idea of the response to D.D. in young cane.

It is too early yet to state categorically that the trouble is due to nematodes. Both the Department of Nematology at Rothamsted and the Department of

A typical, "unhealthy" stool

A typical, "healthy" stool

FIGURE 13

Foreground—Young cane untreated with D.D.
Left background—Cane of same age treated with D.D.

Cane the same age as above, treated with D.D.

FIGURE 14

Nematology of the United States Department of Agriculture have assisted in examining soil and root samples. The following different species of nematodes have been identified:—

Criconemoides	*Dorylaimus*
Tylenchus	*Discolaimus*
Longidorus	*Panagrolaimus*
Helicotylenchus nannus	*Aphelenchus*
Pratylenchus	*Rhabditis*
Eucaphalobus	*Prismatolaimus*
Monochus	

Of the above, *H. nannus*, *Pratylenchus*, *Criconemoides* and *Longidorus* are parasitic nematodes.

Further work is being undertaken to examine the economics of applying different soil fumigants.

The cause of a root rot disease of sugar cane was traced to a nematode—*Tylenchus similis* as early as 1915 by Cobb* from material supplied by Ashby.

K. CHEMICAL LABORATORY

The determinations dealt with during the year in the chemical laboratory are set out in Table XXII:—

TABLE XXII

LABORATORY ANALYSES UNDERTAKEN DURING 1956

1. SOIL SAMPLES:					Available p.p.m.				
	pH	Free $CaCO_3$	NaCl		P_2O_5	K_2O		Total	
	551	5	412		594	594		2156	2,156
2. FOLIAR ANALYSES:					% Dry matter				
				N	P_2O_5	K_2O	Mg		
Advisory				275	216	216	42	749	
Crop-logging experiments ..				576	566	566	566	2274	
Leaf stalk experiments				467	405	405	—	1277	
Nitrogen experiments				1120	53	53	—	1226	
				2438	1240	1240	608		5,526
3. LEAF SHEATH ANALYSES:	% Dry matter	Total sugars % dry matter							
	980	783						1763	1,763
4. CANE STALK ANALYSES:					% Dry matter				
	Brix	Pol	Fibre	% Dry matter	N	P_2O_5	K_2O		
Leaf/stalk experiments				528	1737	1481	1643	5389	
Departmental and estate experiments	412	844	77	—	—	—	—	1333	6,722
5. SUGAR:									
Bulk loading polarisations ..								349	349
6. MISCELLANEOUS:								143	143
								GRAND TOTAL:—	16,659

L. FACTORY REPORTS

Factory and distillery weekly reports were received, checked and circularized to the industry. A summary of factory performance together with comparisons of previous years' figures is given in the tables ot Appendix III of this report.

The opportunity has been taken of comparing the most important of these figures on the basis of their five year moving averages since the year 1945. A moving average was used in order to smooth out the minor variations occurring between consecutive years. The comparisons are presented graphically in Figures 15–23.

Since 1947, there has been little real difference in cane quality as measured by pol % cane—see Figure 15.

The relatively high pol % cane figure for the period 1945–49 coincides with the reduction in proportional acreage of BH10/12 reaped (by estates) from 40% to less than 10%. During the period when the cane milled was almost exclusively Barbados nobilized varieties, i.e. during the last 10 years (a period which has seen B34104 and B3439 almost completely displaced by more recent hybrids) there has been no change in pol % cane.

In the same period fibre % cane increased progressively as a result of the ageing of the cycles in B34104 and B3439, but in the most recent crops, the low fibre % cane of B4362 has exerted its influence.

In recent years the proportion of cane purchased has increased (Fig. 16) which means that an increasing proportion of the capital tied up in the processing of cane to raw sugar has been required for the processing of cane not produced by the processor.

* Cobb, N. A.; Journal of Agricultural Research, 1915, IV, p. 562.

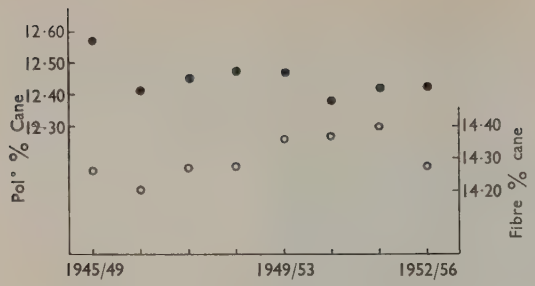

FIGURE 15

Trend in cane quality

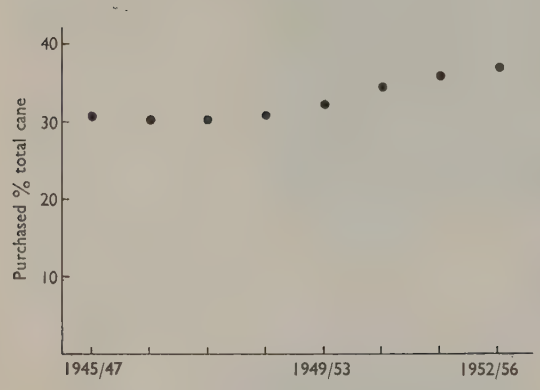

FIGURE 16

Trend in proportion of cane purchased

To meet the increased production illustrated in Figure 17 below, increased capital has been sunk into factory equipment and this has enabled the rate of throughput to be increased substantially as is shown by Figure 18 illustrating the mean trend in tons cane and fibre per hour milled.

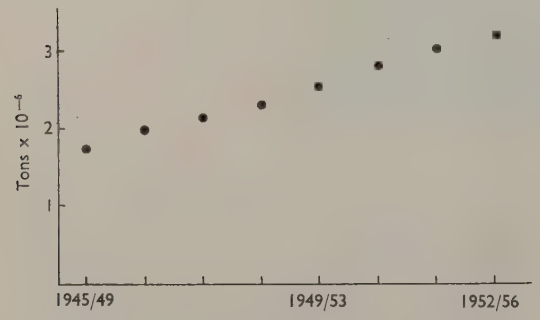

FIGURE 17

Mean trend in total production

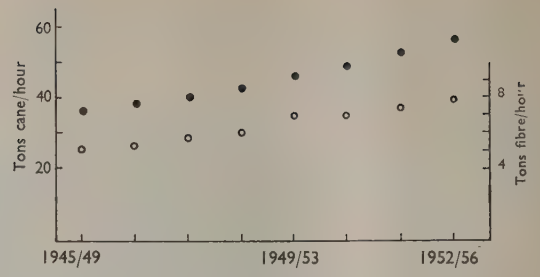

FIGURE 18

Mean trend in tons cane/hour and tons fibre/hour milled

By capital investment and continuously improving use of equipment, the duration of the cropping period has not been unduly prolonged. The mean trend in the average duration of milling (tons milled per rate of milling) is shown in Figure 19:—

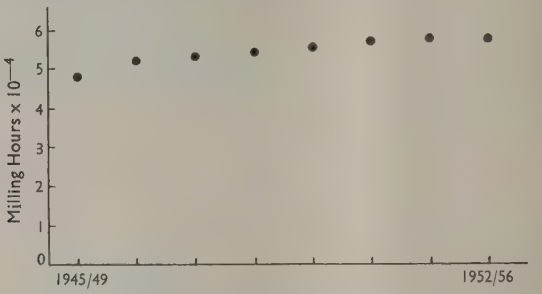

FIGURE 19

Mean trend in average duration in cropping period

In spite of the increasing rates of throughput, most of which was achieved with the same sized rollers (the principal exception being the addition of New Monymusk which has itself increased its throughput), extraction was improved substantially and later maintained, see Figure 20:—

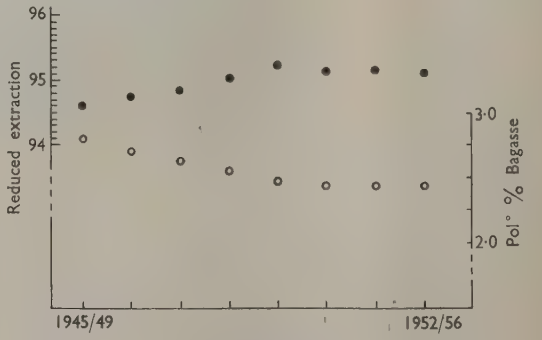

FIGURE 20

Mean trend in reduced extraction and pol % bagasse

In the same period, filtration, though having to cope with increased throughput, actually succeeded in reducing the sugar lost in filter mud by one-third, as is illustrated in Figure 21:—

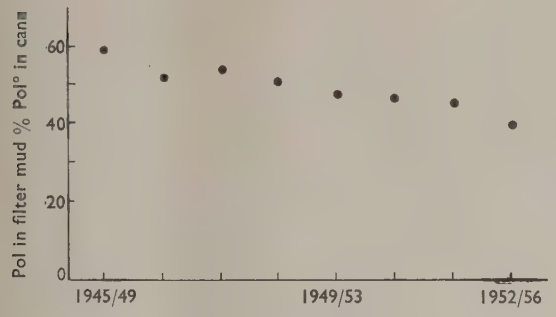

FIGURE 21
Trend in pol lost in filter mud

In the boiling house, the efficiency of the recovery process steadily improved whilst coping with the increased throughput and this in spite of producing sugar of an increasingly high polarization, see Figure 22:—

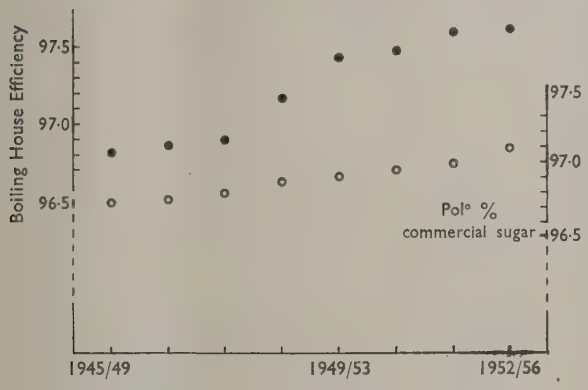

FIGURE 22
Mean trend in boiling house efficiency and the pol of the commercial sugar manufactured

And finally, as would be expected from all the above, each year on the average has found an increasing proportion of the sugar in the cane being bagged—see Figure 23—all in spite of the increasing rate of throughput and all at no cost to the cane farmer, either in capital or in recurrent cost.

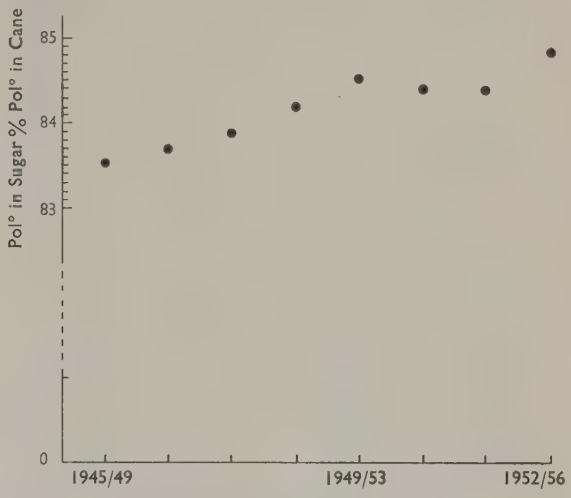

FIGURE 23
Trend in pol in sugar bagged % pol in cane purchased

M. ACKNOWLEDGEMENTS

The keen manner in which all estates' personnel helped with the laying out and reaping of experiments is gratefully acknowledged, as is the co-operation which was so freely given by the Research Officers of Bernard Lodge, Frome, Jamaica Sugar Estates, Monymusk, Vale Royal and Worthy Park. The assistance rendered by Caymanas in the early stages of variety selection was particularly helpful.

APPENDIX I

CANE YIELD SURVEY

TABLE I

Island Cane Crop for Past Ten Years

Crop year	Cane Ground						
	Total tonnage	% increase or decrease on previous crop	Tons purchased	% increase or decrease on previous crop	Tons estates	% increase or decrease on previous crop	Purchased cane % total
1946–47	1,629,182	— 1·9	506,082	— 5·7	1,123,100	— 0·0	31
1947–48	1,882,181	15·5	518,604	2·5	1,363,577	21·4	28
1948–49	2,212,220	17·5	637,346	22·9	1,574,874	15·5	29
1949–50	2,474,754	11·9	764,054	19·9	1,710,700	8·6	31
1950–51	2,425,748	— 2·0	765,814	0·2	1,659,934	— 3·0	32
1951–52	2,468,902	1·8	819,371	0·7	1,649,531	— 0·6	33
1952–53	3,133,752	26·9	1,175,056	43·4	1,958,706	18·7	37
1953–54	3,503,788	11·8	1,380,096	17·5	2,123,692	8·4	39
1954–55	3,564,881	1·7	1,383,855	0·3	2,181,026	2·7	39
1955–56	3,219,977	— 9·7	1,209,410	—12·6	2,010,567	— 7·8	38

In the above table the tonnages are for cane actually ground in the factories. They include cane, the juice from which was sent direct to the distilleries for rum manufacture.

TABLE II

Acreage Reaped by Each Estate Crops 1947–1956

Estates	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
Appleton	575	570	1338	1301	1217	1538	1536	2029	2243	2263
Barnett	815	839	781	791	852	786	817	834	944	954
Bernard Lodge	2170	3332	4214	4358	4780	5061	4678	4925	4127	3733
Caymanas	2181	2709	2565	2597	2720	2879	2835	2963	2905	2513
Frome	6652	6999	7268	7971	8687	8975	9774	10100	10177	10205
Gray's Inn	1354	1636	1802	1934	1873	1903	1956	1954	2013	1929
Green Park	464	458	453	—	—	333	500	—	—	—
Hampden	1454	1484	1616	1566	1706	1847	2112	2443	2678	2538
Holland	458	538	607	741	826	896	1018	1108	1223	1228
Innswood	1737	1837	1874	1894	2065	2208	1809	2168	1940	2219
Ironshore	625	628	688	744	752	—	—	—	—	—
Jamaica Sugar Estates	2474	2533	2544	2976	2884	2914	2938	3137	3177	3078
Long Pond	1227	1223	1617	1722	1842	1824	1803	1846	1836	1783
Monymusk	5017	6988	8676	11356	11996	12730	12963	13668	14590	13375
New Yarmouth	—	1985	2464	2886	3347	3782	3584	3747	3504	3618
Richmond/Llandovery	1033	1067	1230	1322	1497	1429	1461	1482	1505	1529
Rose Hall	1109	1102	1110	1114	1152	1190	1231	1291	1335	1486
Serge Island	1137	1162	1125	1182	1228	1211	1288	1347	1339	1631
Sevens	1254	1432	1483	1635	1584	1851	2095	2107	1942	1834
United Estates	1559	1345	1411	1395	1597	1926	1747	1948	1925	1823
Vale Royal	1550	1614	1650	1635	1766	1769	1977	2126	2162	2176
Worthy Park	1222	1270	1218	1223	1146	1161	1195	1273	1276	1277
Total	37086	43999	48214	52343	55517	58213	59317	62496	62841	61092
* Bog	591	—	—							
Kew	428	436	480							
Raheen	No return	812	—							
Total	1019	1248	480							

* Bog amalgamated with Monymusk, Raheen with Appleton and Kew operating as cane farmers.

TABLE III

TONS CANE PER ACRE BY ESTATES FOR CROPS 1947–1956 ALSO TEN YEAR AVERAGE

Year	Appleton	Barnett	Bernard Lodge	Caymanas	Frome	Gray's Inn Cent.	Green Park	Hampden	Holland	Innswood	Jamaica Sugar Estates	Long Pond
1947	21·5	30·4	28·5	37·5	38·1	38·3	8·7	14·7	30·9	29·7	38·0	13·0
1948	20·5	29·2	38·6	31·1	31·2	34·5	15·8	20·6	26·7	26·1	35·9	16·6
1949	22·0	28·6	32·4	32·3	37·3	36·3	13·0	19·6	29·5	34·1	45·3	16·9
1950	26·5	34·8	39·1	37·9	34·5	29·8	—	21·3	31·5	34·0	33·6	20·7
1951	23·8	30·5	35·6	34·1	30·6	27·6	—	26·1	25·8	32·2	35·9	20·3
1952	15·9	29·4	28·5	31·5	30·3	30·8	16·2	20·3	20·1	28·2	33·8	17·2
1953	26·1	32·7	29·7	35·2	35·3	31·3	15·5	25·5	30·2	35·0	39·9	25·3
1954	34·3	35·4	31·0	41·7	35·8	32·8	—	23·1	30·9	33·5	36·2	21·3
1955	23·6	32·1	35·1	41·3	29·8	29·4	—	27·8	28·5	37·5	36·1	31·7
1956	28·6	28·0	29·3	39·9	30·5	32·7	—	21·1	23·0	32·5	33·4	27·2
10 year average	25·2	31·1	32·8	36·3	33·2	32·1	13·7	22·5	27·9	32·3	36·7	21·5

Year	Monymusk	New Yarmouth	Richmond/ Llandovery	Rose Hall	Serge Island	Sevens	United Estates	Vale Royal	Worthy Park	Island average	Total acres
1947	34·5	—	22·3	14·8	31·1	28·4	26·0	18·5	23·6	29·7	37,084
1948	39·7	42·1	25·1	20·0	29·4	28·9	26·1	20·9	28·9	31·1	43,996
1949	40·8	33·6	32·0	21·4	32·2	33·7	25·0	19·2	27·6	32·7	48,211
1950	35·4	35·0	29·5	21·7	28·2	35·9	28·3	21·4	31·9	32·6	52,340
1951	30·9	34·3	23·9	21·2	26·0	33·1	26·1	22·5	22·8	29·9	55,515
1952	30·2	31·3	29·3	20·9	24·2	30·1	23·5	25·0	23·0	28·3	58,212
1953	36·9	34·2	24·8	18·4	31·7	37·2	31·0	28·0	35·5	33·0	59,316
1954	37·1	35·4	36·1	23·4	31·4	35·1	33·5	24·5	37·4	34·0	62,494
1955	41·0	36·7	33·4	23·9	36·5	40·7	31·2	34·5	36·6	34·8	62,840
1956	39·3	36·9	31·7	24·8	27·9	36·7	35·0	32·0	36·0	33·0	61,089
10 year average	36·5	35·2	29·1	21·2	29·9	34·4	28·8	25·2	30·5	32·0	—

TABLE IV

TONS CANE PER TON THEORETICAL 96° SUGAR BY ESTATES FOR 1952–1956

Estates	1952	1953	1954	1955	1956
Appleton	7·49	7·92	9·26	7·88	7·86
Barnett	8·27	8·76	8·70	8·08	7·73
Bernard Lodge	8·60	8·64	8·37	7·98	7·83
Caymanas	8·77	8·69	8·87	8·31	8·48
Frome	8·62	9·26	9·44	7·89	8·12
Gray's Inn Central	11·38	10·52	10·63	9·68	9·68
Hampden	8·16	8·84	9·28	8·34	7·71
Holland	9·01	8·91	10·09	8·10	9·00
Innswood	8·78	8·90	9·34	8·12	8·66
Jamaica Sugar Estates	9·15	9·75	9·35	8·20	8·63
Long Pond	8·00	9·28	9·55	8·89	8·80
Monymusk	8·51	8·95	8·96	9·17	9·08
New Yarmouth	8·69	8·89	8·88	8·40	8·38
Richmond/Landovery	9·35	8·35	9·06	8·73	8·52
Rose Hall	7·72	8·41	8·22	8·28	7·98
Serge Island	7·83	7·97	8·46	7·59	7·94
Sevens	9·07	8·78	8·69	8·67	8·70
United Estates	7·66	8·11	8·57	7·80	7·84
Vale Royal	8·41	8·96	9·13	8·62	8·42
Worthy Park	7·60	7·45	7·59	7·01	7·22
Average	8·56	8·95	9·03	8·43	8·46

Figures quoted are theoretical—based on 100 B.H.E. and 97% Pol Extraction.

TABLE V

TONS THEORETICAL 96° SUGAR PER ACRE BY ESTATES FOR 1952–1956

Estates	1952 (theoretical)	1953 (theoretical)	1954 (theoretical)	1955 (theoretical)	1956 (theoretical)
Appleton	2·12	3·29	3·70	3·00	3·64
Barnett	3·73	3·73	4·07	3·97	3·62
Bernard Lodge	3·31	3·44	3·70	4·40	3·74
Caymanas	3·59	4·05	4·70	4·97	4·70
Frome	3·52	3·81	3·79	3·78	3·75
Gray's Inn Central	2·71	2·98	3·09	3·03	3·38
Hampden	2·49	2·88	2·49	3·33	2·73
Holland	2·67	3·39	3·95	3·52	2·56
Innswood	3·21	3·93	3·58	4·62	3·75
Jamaica Sugar Estates	3·69	4·09	3·88	4·41	3·88
Long Pond	2·17	2·73	2·23	3·57	3·09
Monymusk	3·68	4·12	4·14	4·47	4·32
New Yarmouth	3·60	3·85	3·98	4·37	4·40
Richmond/Llandovery	3·13	2·97	3·98	3·82	3·72
Rose Hall	2·70	2·19	2·85	2·88	3·11
Serge Island	3·09	3·98	3·71	4·81	3·52
Sevens	3·32	4·22	4·04	4·69	4·22
United Estates	3·07	3·82	3·91	3·97	4·46
Vale Royal	2·97	3·12	2·68	4·00	3·80
Worthy Park	3·02	4·77	4·93	5·22	4·98
Average	3·29	3·69	3·76	4·12	3·90

TABLE VI

CWTS. THEORETICAL 96° SUGAR PER ACRE PER MONTH BY ESTATES FOR 1952–1956

Estates	1952	1953	1954	1955	1956
Appleton	**(69)** 3·73 (70)	**(96)** 5·56 (93)	**(87)** 5·26 (87)	**(86)** 5·49 (92)	**(96)** 6·26 (96)
Barnett	**(100)** 5·45 (102)	**(96)** 5·54 (93)	**(103)** 6·19 (102)	**(100)** 6·42 (108)	**(93)** 6·11 (93)
Bernard Lodge	**(101)** 5·47 (89)	**(99)** 5·72 (93)	**(98)** 5·91 (91)	**(100)** 6·43 (94)	**(104)** 6·81 (98)
Caymanas	**(104)** 5·67 (92)	**(111)** 6·43 (104)	**(116)** 6·98 (107)	**(119)** 7·63 (112)	**(114)** 7·48 (108)
Frome	**(100)** 5·43 (101)	**(102)** 5·90 (99)	**(103)** 6·23 (103)	**(95)** 6·09 (102)	**(105)** 6·85 (105)
Gray's Inn Central	**(83)** 4·52 (84)	**(103)** 5·96 (100)	**(88)** 5·28 (87)	**(76)** 4·87 (82)	**(86)** 5·63 (93)
Hampden	**(66)** 3·59 (84)	**(73)** 4·24 (101)	**(61)** 3·67 (90)	**(75)** 4·83 (92)	**(67)** 4·36 (83)
Holland	**(85)** 4·62 (86)	**(90)** 5·21 (87)	**(104)** 6·30 (104)	**(74)** 4·77 (80)	**(73)** 4·76 (73)
Innswood	**(99)** 5·39 (88)	**(102)** 5·90 (96)	**(94)** 5·67 (87)	**(98)** 6·26 (92)	**(92)** 6·04 (87)
Jamaica Sugar Estates	**(113)** 6·14 (115)	**(116)** 6·73 (113)	**(104)** 6·30 (104)	**(108)** 6·91 (116)	**(100)** 6·51 (108)
Long Pond	**(70)** 3·82 (89)	**(67)** 3·86 (92)	**(67)** 4·02 (99)	**(84)** 5·38 (103)	**(84)** 5·47 (104)
Monymusk	**(116)** 6·33 (103)	**(110)** 6·37 (103)	**(112)** 6·73 (103)	**(112)** 7·22 (106)	**(108)** 7·09 (102)
New Yarmouth	**(107)** 5·84 (95)	**(96)** 5·55 (90)	**(107)** 6·48 (99)	**(100)** 6·43 (94)	**(99)** 6·55 (95)
Richmond/Llandovery	**(90)** 4·87 (91)	**(89)** 5·14 (86)	**(98)** 5·93 (98)	**(97)** 6·21 (104)	**(94)** 6·15 (102)
Rose Hall	**(90)** 4·88 (114)	**(80)** 3·48 (83)	**(78)** 4·75 (116)	**(74)** 4·76 (91)	**(80)** 5·22 (99)
Serge Island	**(88)** 4·81 (90)	**(109)** 6·32 (106)	**(98)** 5·89 (98)	**(99)** 6·34 (106)	**(84)** 5·52 (91)
Sevens	**(113)** 6·13 (100)	**(117)** 6·76 (110)	**(117)** 7·07 (108)	**(113)** 7·28 (107)	**(109)** 7·12 (103)
United Estates	**(113)** 6·15 (115)	**(105)** 6·05 (102)	**(98)** 5·88 (97)	**(106)** 6·79 (114)	**(110)** 7·22 (93)
Vale Royal	**(97)** 5·25 (122)	**(86)** 4·98 (118)	**(72)** 4·34 (106)	**(96)** 6·19 (118)	**(96)** 6·26 (119)
Worthy Park	**(105)** 5·71 (107)	**(137)** 7·92 (133)	**(137)** 8·27 (137)	**(135)** 8·67 (145)	**(132)** 8·65 (111)
Average	5·44	5·78	6·03	6·42	6·54

Bold figures in brackets = cwt. theoretical sugar per acre per month expressed as a percentage of the island average in the same year.
Light figures in brackets = cwt. theoretical sugar per acre per month expressed as a percentage of the average for the ecological area in the same year.

TABLE VII

Total Acreage under Variety % Total Acreage by Estates for 1951–1956

Estates	B34104						B3439						B37172						B37161						POJ2878					
	'51	52	53	54	55	56	'51	52	53	54	55	56	'51	52	53	54	55	56	'51	52	53	54	55	56	'51	52	53	54	55	56
Appleton	75	82	84	49	36	15	2	1	—	—	—	—	—	1	4	3	19	19	—	—	—	20	3	2	—	—	1	—	—	—
Barnett	4	1	1	1	—	—	36	35	38	30	25	20	—	—	—	55	1	2	60	61	58	2	56	46	—	—	—	—	—	—
Bernard Lodge	61	64	66	55	37	28	28	22	14	9	7	6	1	1	—	8	—	—	4	5	6	—	7	6	—	—	—	1	1	1
Caymanas	37	32	29	15	7	1	30	36	36	36	34	30	—	—	—	2	—	—	—	—	—	1	3	3	3	3	2	2	1	1
Frome	92	85	61	53	37	21	—	—	—	—	—	—	—	—	—	12	—	—	6	10	13	—	11	9	—	—	—	—	—	—
Gray's Inn Central	24	21	8	4	4	4	12	14	15	14	11	7	46	62	56	—	43	42	—	—	—	51	—	—	—	—	—	—	—	—
Green Park	—	8	6	—	—	—	—	44	36	—	—	—	—	—	—	—	—	—	—	2	5	—	—	—	—	22	16	—	—	—
Hampden	1	—	—	—	—	—	6	2	1	1	1	1	—	—	—	31	—	—	31	36	36	—	28	26	10	3	4	2	1	1
Holland	58	53	51	49	42	35	17	16	11	9	5	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Innswood	75	79	69	75	78	74	8	7	6	2	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Jamaica Sugar Estates	—	—	—	—	—	—	3	1	—	—	—	—	87	95	88	77	71	68	—	—	—	—	—	—	2	—	—	—	—	—
Long Pond	51	46	35	25	15	8	7	6	7	8	6	7	—	—	—	27	—	—	8	18	27	—	29	31	20	17	16	21	18	17
Monymusk	63	50	31	15	4	1	26	28	25	21	14	6	—	—	—	3	—	—	3	3	4	1	3	1	—	—	—	—	—	—
New Yarmouth	70	55	36	16	6	3	22	41	50	51	42	33	—	—	—	3	—	—	—	—	2	—	3	3	—	—	—	—	—	—
Richmond/Llandovery	7	9	6	4	2	1	49	58	62	52	48	39	—	—	—	18	·	—	30	17	16	—	16	15	—	—	—	—	—	—
Rose Hall	16	22	19	16	11	7	67	61	59	55	44	28	—	—	—	13	—	—	3	5	8	—	15	15	—	—	—	—	—	—
Serge Island	37	18	10	4	—	—	18	23	20	20	11	6	30	48	65	1	76	65	—	1	1	65	—	—	—	—	—	—	—	—
Sevens	27	22	12	9	6	5	64	69	72	68	53	43	—	—	—	1	—	—	·	—	—	—	—	—	—	—	—	—	—	—
United Estates	61	60	47	32	21	9	30	28	33	24	18	9	1	1	2	1	2	2	—	—	2	2	2	2	—	—	—	—	—	—
Vale Royal	30	10	9	4	1	—	31	12	12	7	6	3	—	—	—	25	—	—	15	22	26	—	21	22	—	—	—	—	—	—
Worthy Park	63	48	20	5	—	—	7	4	4	1	1	—	1	1	1	2	—	—	5	5	6	1	—	—	—	—	—	—	—	—
Average	54	48	35	26	16	11	21	22	21	18	13	9	7	8	8	8	7	7	6	6	8	8	8	7	1	1	1	1	1	1

TABLE VII—*continued*

Estates	B41227					B42231					B4362					Co421			Co331		Others					
	'52	53	54	55	56	'52	53	54	55	56	'52	53	54	55	56	'54	55	56	'55	56	'51	52	53	54	55	56
Appleton	—	—	14	23	42	—	—	—	—	—	—	—	1	5	11	—	—	—	1	4	23	16	11	11	13	7
Barnett	2	1	2	5	8	—	—	—	—	—	—	—	5	6	11	—	—	—	—	—	—	—	2	4	8	13
Bernard Lodge	—	1	4	8	9	—	1	7	15	24	2	6	13	21	23	—	—	—	—	—	6	6	6	4	4	3
Caymanas	—	—	—	—	4	—	1	8	17	28	—	5	14	20	25	—	1	1	—	1	30	29	27	22	17	6
Frome	1	11	15	27	40	—	1	2	3	3	3	13	17	20	26	—	—	—	—	—	2	1	1	1	2	1
Gray's Inn Central	—	—	—	—	—	—	—	—	—	2	—	5	14	25	28	—	—	—	—	—	18	3	16	17	17	17
Green Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24	36	—	—	—
Hampden	—	—	—	1	1	—	—	—	—	—	2	4	9	13	14	—	1	1	2	3	52	57	55	57	53	53
Holland	—	—	—	5	7	—	—	—	—	—	—	3	10	15	22	—	—	—	—	—	25	30	35	35	33	33
Innswood	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17	14	20	18	15	10
Jamaica Sugar Estates	1	—	—	—	—	—	—	—	—	—	—	6	15	20	26	—	—	—	—	—	8	3	6	8	9	6
Long Pond	—	—	—	—	1	—	—	—	1	1	—	—	—	—	1	6	13	21	2	7	14	13	15	14	15	6
Monymusk	3	9	21	39	51	7	14	22	25	22	—	3	6	9	11	—	—	—	—	—	8	9	13	12	6	8
New Yarmouth	—	1	15	18	19	—	2	6	13	27	—	—	3	6	7	—	—	—	—	—	8	4	9	6	12	8
Richmond/Llandovery	—	—	4	8	16	—	—	—	—	—	—	—	4	10	14	—	—	—	—	—	14	16	16	18	16	14
Rose Hall	—	—	—	5	12	—	—	—	—	—	—	—	1	3	2	—	—	—	1	4	14	12	14	14	21	32
Serge Island	5	2	1	1	1	—	—	—	—	—	—	2	3	8	23	—	—	—	—	—	15	5	—	6	4	5
Sevens	—	33	3	7	11	—	—	—	—	5	—	3	9	26	30	—	—	—	—	—	9	9	10	10	8	6
United Estates	1	3	10	12	15	—	1	4	6	7	—	1	9	25	42	—	—	—	—	—	7	10	11	18	14	14
Vale Royal	—	—	1	3	4	—	—	1	2	2	—	1	6	9	12	21	20	17	19	22	24	56	52	36	19	18
Worthy Park	7	11	16	24	28	1	5	9	9	5	11	29	44	48	51	—	—	—	—	—	14	22	24	21	18	16
Average	1	5	10	18	24	2	4	7	9	10	1	5	10	14	18	1	1	1	1	1	11	11	13	13	12	11

TABLE VIII

Plant Acreage under Variety % Total Plant Acreage by Estates for 1951–1956

Estates	B34104						B3439						B37172						B37161						B3172					
	'51	52	53	54	55	56	'51	52	53	54	55	56	'51	52	53	54	55	56	'51	52	53	54	55	56	'51	52	53	54	55	56
Appleton	88	87	67	3	—	—	—	—	—	—	—	—	—	5	13	41	—	2	—	—	—	7	3	—	—	—	—	—	—	—
Barnett	2	—	—	—	—	—	29	38	37	16	—	—	—	2	—	7	—	—	69	60	63	37	43	4	—	—	—	—	—	—
Bernard Lodge	63	63	46	5	—	—	22	7	11	7	—	—	—	1	—	—	—	—	4	12	10	14	—	—	—	—	—	—	—	—
Caymanas	30	14	6	2	—	—	24	53	36	21	11	13	1	—	—	3	—	—	—	—	—	6	—	—	—	—	—	—	—	—
Frome	92	69	13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	16	16	3	—	—	—	—	—	—	—	—
Gray's Inn Central	—	5	—	—	—	—	—	7	16	10	—	3	100	88	29	—	13	18	—	—	—	—	—	—	—	—	—	—	—	—
Green Park	—	100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13	—	—	—	—	—	—	—	—	—
Hampden	—	—	—	—	—	—	—	1	—	2	2	—	—	—	—	—	—	—	50	30	33	24	19	8	22	37	20	—	5	—
Holland	—	11	47	8	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Innswood	72	100	41	71	20	—	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Jamaica Sugar Estates	—	—	—	—	—	—	—	—	—	—	—	—	100	99	63	12	31	52	—	—	—	—	—	—	—	—	—	—	—	—
Long Pond	4	—	1	—	—	—	48	2	16	6	2	—	—	—	—	—	—	1	46	90	46	17	20	2	—	—	—	—	—	—
Monymusk	63	25	1	—	—	—	21	31	11	2	1	—	—	3	—	—	—	—	10	3	7	—	—	—	—	—	—	—	—	—
New Yarmouth	86	35	4	1	—	—	13	61	72	24	5	—	—	—	—	—	—	—	—	—	6	4	2	2	—	—	—	—	—	—
Richmond/Llandovery	—	—	—	—	—	—	34	57	66	32	13	—	—	—	—	—	—	—	34	13	14	25	18	1	—	—	—	—	—	—
Rose Hall	22	19	7	13	1	—	72	58	64	35	20	6	—	—	—	—	—	—	4	9	15	27	15	17	—	—	—	—	—	—
Serge Island	11	—	—	4	—	—	20	31	18	20	10	—	64	65	77	65	66	27	1	—	—	1	—	—	—	—	—	—	—	—
Sevens	—	11	—	—	—	—	100	81	59	8	2	—	—	1	—	—	—	—	—	—	3	—	—	—	—	—	—	—	—	—
United Estates	74	47	9	—	—	—	20	29	39	3	—	—	2	7	3	4	—	—	—	1	8	—	5	—	—	—	6	—	—	—
Vale Royal	9	3	—	—	—	—	13	7	4	—	—	—	—	—	—	—	—	—	18	25	32	—	11	—	—	—	2	—	—	—
Worthy Park	—	—	—	—	—	—	—	—	—	—	—	—	14	—	—	—	—	—	29	—	—	—	—	—	—	—	—	—	—	—
Average	55	34	10	3	—	—	17	24	17	8	2	1	7	8	7	5	3	3	8	9	11	7	3	1	1	1	1	—	—	—

TABLE VIII—*continued*

Estates	B41227					B42231					B4362					POJ2878					Co421		Co331		Others					
	'52	53	54	55	56	'52	53	54	55	56	'52	53	54	55	56	'52	53	54	55	56	'55	56	'55	56	'51	52	53	54	55	56
Appleton	—	—	33	56	56	—	—	—	—	—	—	—	3	20	21	—	2	—	—	—	—	—	6	10	12	8	18	12	15	11
Barnett	—	—	4	14	35	—	—	—	—	—	—	—	20	7	44	—	—	—	—	—	—	—	—	—	—	—	—	16	36	17
Bernard Lodge	—	2	15	21	7	—	5	24	41	75	12	22	34	38	13	—	2	2	—	—	—	—	—	—	11	5	2	—	—	5
Caymanas	—	2	—	1	15	—	5	25	42	58	—	23	34	26	5	1	4	—	—	—	2	—	1	3	45	32	25	9	17	6
Frome	3	31	46	76	62	1	3	8	4	5	8	36	43	20	33	—	—	—	—	—	—	—	—	—	3	3	1	—	—	—
Gray's Inn Central	—	—	—	—	—	—	—	—	—	15	—	—	75	70	64	—	—	—	—	—	—	—	—	—	—	—	27	14	17	—
Green Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	87	—	—	—
Mampden	—	—	1	2	6	—	—	—	—	4	6	10	22	30	24	—	3	—	2	—	3	6	11	2	28	28	34	51	26	50
Holland	—	—	—	43	20	—	—	—	—	—	4	22	65	48	80	—	—	—	—	—	—	—	—	—	—	85	31	26	5	—
Innswood	—	31	9	52	100	—	—	—	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	19	—	25	20	28	—
Jamaica Sugar Estates	—	—	—	—	—	—	—	—	—	—	—	28	63	45	40	—	—	—	—	—	—	—	—	—	—	1	9	24	24	8
Long Pond	—	—	—	—	6	—	—	1	7	—	—	—	—	—	6	—	16	30	6	3	43	35	13	33	2	8	21	24	9	14
Monymusk	7	25	49	67	60	14	30	34	18	20	2	10	12	12	10	—	—	—	—	—	—	—	—	—	6	14	16	3	2	10
New Yarmouth	—	4	42	17	10	2	8	12	31	68	—	—	10	17	10	—	—	—	—	—	—	—	—	—	1	2	6	7	28	10
Richmond/Llandovery	—	—	14	21	52	—	—	—	—	1	—	—	13	34	36	—	—	—	—	—	—	—	—	3	32	30	20	16	14	7
Rose Hall	—	—	—	21	44	—	—	—	—	—	—	2	3	3	—	—	—	—	—	—	—	—	3	19	2	14	13	31	37	14
Serge Island	4	—	1	2	—	—	—	—	—	—	—	5	3	20	73	—	—	—	—	—	—	—	—	—	4	—	—	6	2	—
Sevens	—	13	—	15	22	—	—	—	—	35	—	14	79	80	25	—	—	—	—	—	—	—	—	—	—	7	11	13	3	18
United Estates	3	12	33	5	14	—	4	12	11	5	—	6	33	79	76	—	—	—	—	—	—	—	—	—	4	13	13	16	—	5
Vale Royal	—	—	3	18	18	—	—	3	12	9	—	3	22	12	46	—	—	—	—	—	3	—	21	10	60	65	59	46	23	17
Worthy Park	30	10	21	55	33	—	13	13	—	—	66	55	55	33	64	—	—	—	—	—	—	—	—	—	57	4	22	11	12	3
Average	3	14	26	42	39	4	9	15	14	18	4	17	23	24	26	—	1	1	—	—	1	1	1	3	12	13	13	12	10	8

TABLE IX

TONS CANE PER ACRE FOR VARIETIES BY ESTATES AND ECOLOGICAL GROUPS—1956 CROP

Estates	B3439	B34104	B37161	B37172	B41227	B42231	B4362	POJ2878	Co331	Co421	Mixed and others	Average
Appleton	—	23·1	21·7	24·9	32·3	—	31·8	22·0	26·8	—	27·6	28·6
Barnett	22·7	—	26·6	23·1	36·7	—	36·0	—	—	—	29·8	28·0
Frome	43·1	22·9	25·7	18·4	32·7	31·6	34·6	26·8	—	30·2	29·3	30·5
Holland	20·9	18·8	—	—	36·3	—	28·4	—	—	—	21·3	23·0
Wet West Estates	23·2	22·3	25·8	24·8	32·7	31·6	34·0	22·3	26·8	30·2	24·9	29·4
Hampden	22·0	—	21·0	—	28·2	27·3	23·0	22·9	24·8	23·1	20·0	21·1
Long Pond	25·4	20·6	24·5	33·3	45·8	36·2	35·0	22·7	35·6	32·6	30·1	27·2
Rose Hall	23·7	22·2	25·8	—	30·7	—	25·4	—	32·8	—	22·6	24·8
Vale Royal	30·6	28·4	32·1	—	37·7	37·7	33·4	—	33·8	28·2	30·7	32·0
Dry North Coast	24·6	21·6	25·4	33·3	33·3	35·4	27·5	22·7	33·0	30·2	22·8	26·1
Bernard Lodge	24·7	24·2	29·1	—	28·8	34·3	31·7	29·0	—	—	29·7	29·3
Caymanas	36·1	27·0	37·1	—	53·7	44·9	37·7	32·4	44·7	35·3	41·0	39·9
Innswood	27·3	29·5	—	—	44·0	—	50·6	—	—	—	38·0	32·5
Monymusk	34·3	40·4	38·4	27·3	42·1	33·9	40·6	37·8	34·6	—	37·9	39·3
New Yarmouth	29·1	33·5	28·9	—	35·4	45·8	41·9	—	—	—	41·9	36·9
Sevens	35·4	31·5	—	—	38·1	39·4	38·6	—	—	—	36·9	36·7
Irrigated Estates	32·7	28·1	32·8	27·3	41·2	37·5	37·9	30·8	41·1	35·3	38·3	36·9
Gray's Inn Central	36·8	28·1	—	32·1	—	—	35·7	—	—	—	29·0	32·7
Jamaica Sugar Estates	—	—	—	33·4	—	—	34·4	—	—	—	29·6	33·4
Richmond/Llandovery	27·6	33·3	28·9	—	36·6	39·9	41·2	—	18·2	—	30·9	31·7
Serge Island	21·5	29·3	36·6	26·1	31·7	—	34·5	—	—	—	27·7	27·9
Wet East Estates	28·4	29·0	29·0	31·3	36·4	39·9	35·6	—	18·2	—	29·5	31·9
United Estates	28·2	25·8	31·4	25·1	35·2	35·7	39·3	—	—	—	33·7	35·0
Worthy Park	—	—	—	—	37·3	35·8	35·7	—	—	—	34·5	36·0
Central Estates—Medium rainfall	28·2	25·8	31·4	25·1	36·4	35·8	37·6	—	—	—	34·0	35·4
Overall average	30·6	25·2	26·8	30·6	37·8	37·1	35·7	23·9	32·5	30·4	29·4	33·0

TABLE X

TONS CANE PER TON THEORETICAL 96° SUGAR FOR VARIETIES BY ESTATES AND ECOLOGICAL GROUPS—1956 CROP

Estates	B3439	B34104	B37161	B37172	B41227	B42231	B4362	POJ2878	Co331	Co421	Others	Average
Appleton	—	7·79	8·01	7·53	8·02	—	7·65	7·29	9·03	—	7·56	7·86
Barnett	7·93	—	7·57	7·87	8·15	—	7·68	—	—	—	7·76	7·73
Frome	7·91	8·49	8·19	8·00	8·06	7·98	8·03	7·31	—	6·89	8·50	8·13
Holland	8·37	10·01	—	—	9·19	—	8·56	—	—	—	8·57	9·00
Wet West Estates	7·99	8·56	7·97	7·55	8·06	7·98	8·03	7·29	9·03	6·89	8·18	8·10
Hampden	7·72	—	7·72	—	8·01	7·71	7·63	7·64	7·90	8·11	7·69	7·71
Long Pond	8·65	8·25	8·48	9·20	10·15	9·03	7·95	8·68	9·50	9·10	9·04	8·80
Rose Hall	7·91	7·85	7·95	—	8·07	—	7·60	—	8·48	—	7·97	7·98
Vale Royal	9·70	8·66	8·32	—	9·41	8·02	7·97	—	8·84	8·88	7·55	8·42
Dry North Coast	8·21	8·09	8·13	9·20	8·57	8·76	7·80	8·59	8·84	8·99	7·78	8·24
Bernard Lodge	8·02	7·79	8·71	—	8·12	7·83	7·54	8·76	—	—	7·98	7·84
Caymanas	8·42	10·78	8·30	—	9·29	8·64	7·83	9·56	10·52	10·07	9·58	8·48
Innswood	9·97	8·55	—	—	8·92	—	8·09	—	—	—	8·77	8·66
Monymusk	8·69	8·89	9·02	9·38	9·22	8·96	8·82	11·71	10·37	—	9·23	9·08
New Yarmouth	8·54	9·15	8·57	—	8·57	8·11	8·15	—	—	—	8·55	8·38
Sevens	8·74	9·56	—	—	8·93	8·89	8·39	—	—	—	8·93	8·70
Irrigated Estates	8·58	8·38	8·73	9·38	9·12	8·53	8·26	9·22	10·43	10·07	8·99	8·72
Gray's Inn Central	12·32	10·17	—	9·59	—	—	9·64	—	—	—	8·99	9·68
Jamaica Sugar Estates	—	—	—	8·77	—	—	8·36	—	—	—	8·32	8·63
Richmond/Llandovery	8·30	8·70	8·43	—	8·76	11·67	8·59	—	9·39	—	8·64	8·52
Serge Island	7·75	8·39	9·06	8·02	8·77	—	7·69	—	—	—	8·25	7·94
Wet East Estates	8·86	9·76	8·44	8·75	8·76	11·67	8·58	—	9·39	—	8·68	8·71
United Estates	7·61	7·82	7·76	7·69	8·05	8·01	7·77	—	—	—	7·91	7·84
Worthy Park	—	—	—	—	7·39	7·51	7·17	—	—	—	6·92	7·22
Central Estates—Medium rainfall	7·61	7·82	7·76	7·69	7·67	7·81	7·50	—	—	—	7·43	7·56
Overall average	8·53	8·44	8·20	8·63	8·69	8·50	8·11	8·64	8·01	9·01	8·35	8·46

TABLE XI

TONS THEORETICAL 96° SUGAR PER ACRE FOR VARIETIES BY ESTATES AND ECOLOGICAL GROUPS—1956 CROP

Estates	B3439	B34104	B37161	B37172	B41227	B42231	B4362	POJ2878	Co331	Co421	Others	Average
Appleton	—	2·96	2·71	3·30	4·02	—	4·16	3·01	3·18	—	3·67	3·64
Barnett	2·86	—	3·51	2·94	4·50	—	4·69	—	—	—	3·85	3·62
Frome	5·44	3·11	3·14	2·30	4·06	3·96	4·31	3·67	—	4·38	3·44	3·75
Holland	2·50	1·88	—	—	3·95	—	3·32	—	—	—	2·61	2·56
Wet West Estates	2·90	2·60	3·24	3·28	4·06	3·96	4·23	3·06	3·18	4·38	3·05	3·63
Hampden	2·84	—	2·72	—	3·52	3·54	3·01	3·00	3·14	2·84	2·60	2·73
Long Pond	2·93	2·49	2·49	3·62	4·51	4·01	4·40	2·61	3·75	3·58	3·33	3·09
Rose Hall	3·00	2·83	3·25	—	3·81	—	3·34	—	3·86	—	2·83	3·11
Vale Royal	3·16	3·28	3·86	—	4·01	4·22	4·19	—	3·82	3·18	4·07	3·80
Dry North Coast	2·99	2·67	3·12	3·62	3·88	4·05	3·52	2·64	3·73	3·36	2·93	3·17
Bernard Lodge	3·08	3·11	3·34	—	3·54	4·38	4·20	3·31	—	—	3·72	3·74
Caymanas	4·28	2·51	4·47	—	5·78	5·20	4·81	3·39	4·25	3·50	4·22	4·70
Innswood	2·74	3·44	—	—	4·93	—	6·26	—	—	—	4·55	3·75
Monymusk	3·95	4·54	4·26	2·91	4·57	3·78	4·60	3·23	3·34	—	4·11	3·93
New Yarmouth	3·41	3·66	3·71	—	4·13	5·65	5·14	—	—	—	4·87	4·90
Sevens	4·05	3·30	—	—	4·27	4·43	4·60	—	—	—	4·13	4·22
Irrigated Estates	3·81	3·26	3·79	2·91	4·52	4·39	4·59	3·34	4·94	3·50	4·26	4·23
Gray's Inn Central	2·98	2·77	—	3·36	—	3·96	3·70	—	—	—	3·16	3·38
Jamaica Sugar Estates	—	—	—	3·81	—	—	4·12	—	—	—	3·56	3·62
Richmond/Llandovery	3·45	3·83	3·43	—	4·17	3·42	4·35	—	1·93	—	3·80	3·72
Serge Island	2·78	3·49	4·04	3·26	3·61	—	4·48	—	—	—	3·36	3·52
Wet East Estates	3·29	2·97	3·44	3·58	4·15	3·91	4·10	—	1·93	—	3·38	3·66
United Estates	3·70	3·30	4·05	3·26	4·37	4·46	5·06	—	—	—	4·26	4·46
Worthy Park	—	—	—	—	5·04	4·77	4·98	—	—	—	4·98	4·98
Central Estates—Medium rainfall	3·70	3·30	4·05	3·26	4·74	4·58	5·02	—	—	—	4·58	4·68
Overall average	3·61	2·98	3·27	3·54	4·35	4·36	4·39	2·76	3·65	3·37	4·42	3·90

TABLE XII

CWTS. THEORETICAL 96° SUGAR PER ACRE PER MONTH FOR VARIETIES BY ESTATES AND ECOLOGICAL GROUPS

Estates	B3439	B34104	B37161	B37172	B41227	B42231	B4362	POJ2878	Co331	Co421	Others	Average
Appleton	—	5·49	4·83	5·77	6·76	—	7·11	5·27	4·92	—	6·10	6·26
Barnett	5·02	—	5·90	4·44	7·22	—	8·10	—	—	—	6·40	6·11
Frome	5·73	5·42	5·93	4·18	7·23	6·94	7·57	6·82	—	7·79	6·66	6·85
Holland	4·99	3·56	—	—	6·61	—	5·95	—	—	—	4·73	4·76
Wet West Estates	5·06	5·14	5·87	5·69	7·13	6·94	7·42	5·38	4·92	7·79	5·56	6·54
Hampden	3·84	—	4·41	—	5·58	5·25	4·69	4·98	4·85	3·92	4·17	4·36
Long Pond	5·61	4·40	5·54	5·17	5·47	8·01	6·63	4·87	5·60	5·78	6·06	5·47
Rose Hall	5·14	4·84	5·39	—	6·21	—	6·06	—	6·07	—	4·73	5·22
Vale Royal	5·15	5·23	6·55	—	6·11	7·19	7·11	—	6·48	5·49	5·95	6·26
Dry North Coast	5·15	4·62	5·37	5·17	6·08	6·95	5·71	4·88	6·08	5·59	4·69	5·27
Bernard Lodge	5·88	6·11	6·48	—	6·51	7·17	5·24	6·32	—	—	6·62	6·81
Caymanas	7·07	4·24	7·45	—	8·11	7·79	7·88	5·88	6·43	5·97	6·94	7·48
Innswood	4·98	5·92	—	—	6·47	—	6·68	—	—	—	6·15	6·04
Monymusk	7·09	7·24	7·39	5·30	7·28	6·11	8·03	4·61	5·24	—	7·49	7·09
New Yarmouth	5·75	5·89	5·54	—	6·20	7·35	7·03	—	—	—	7·24	6·55
Sevens	6·95	5·79	—	—	7·21	6·78	7·80	—	—	—	6·35	7·12
Irrigated Estates	6·56	6·01	6·70	5·30	7·14	6·74	7·80	6·05	6·03	5·97	7·08	6·93
Gray's Inn Central	4·95	4·84	—	5·43	—	—	6·30	—	—	—	5·55	5·63
Jamaica Sugar Estates	—	—	—	6·68	—	—	6·22	—	—	—	6·14	6·51
Richmond/Llandovery	5·95	6·81	5·56	—	6·68	5·94	6·77	—	3·03	—	6·02	6·15
Serge Island	4·81	5·59	7·03	5·37	6·39	—	5·92	—	—	—	5·73	5·52
Wet East Estates	5·64	5·17	5·59	6·06	6·67	5·94	6·24	—	3·03	—	5·82	6·04
United Estates	6·25	5·48	6·81	5·61	6·86	7·04	8·21	—	—	—	6·75	7·22
Worthy Park	—	—	—	—	8·56	7·83	8·76	—	—	—	8·75	8·65
Central Estates—Medium rainfall	6·25	5·48	6·81	5·61	7·78	7·32	8·45	—	—	—	7·58	7·78
Overall average	6·20	5·55	5·74	6·02	7·13	6·77	7·34	5·08	5·95	5·61	5·86	6·54

TABLE XIII

Comparison of Varieties Showing Actual Yields and Expressed as a Percentage of B4362

	B4362	B3439	B34104	B37161	B37172	B41227	B42231	POJ2878	Co331	Co421
Tons cane per acre per month	3·01 (100) 3·05 (100) 3·00 (100) 3·04 (100) 3·01 (100) 3·07 (100) 3·05 (100) 3·06 (100) 2·90 (100)	2·65 (88)	2·34 (77)	2·35 (78)	2·60 (86)	3·10 (103)	2·88 (94)	2·19 (72)	2·65 (87)	2·53 (87)
Cwt. sugar per acre per month	7·36 (100) 7·46 (100) 7·44 (100) 7·35 (100) 7·50 (100) 7·64 (100) 7·51 (100) 7·34 (100) 7·29 (100)	6·20 (84)	5·55 (74)	5·74 (77)	6·02 (82)	7·13 (95)	6·77 (89)	5·08 (68)	5·95 (81)	5·61 (77)
Tons cane per ton sugar	8·18 (100) 8·18 (100) 8·06 (100) 8·28 (100) 8·02 (100) 8·04 (100) 8·11 (100) 8·34 (100) 7·96 (100)	8·53 (96)	8·44 (97)	8·20 (98)	8·63 (96)	8·69 (92)	8·50 (95)	8·64 (94)	8·91 (94)	9·01 (88)

TABLE XIV

Tons Cane per Acre for Estates by Cane Class—1956 Crop

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old cane	Average
Appleton	34·2	32·9	—	31·9	26·3	23·9	24·0	28·6
Barnett	54·0	36·6	—	34·5	26·4	22·9	24·3	28·0
Bernard Lodge	48·4	31·4	—	32·2	29·3	26·8	24·4	29·3
Caymanas	61·9	38·4	—	39·2	36·4	35·3	35·3	39·9
Frome	45·5	35·6	—	36·8	30·9	27·9	25·0	30·5
Gray's Inn Central	40·2	36·3	—	34·0	33·7	31·6	31·6	32·7
Hampden	24·9	25·8	—	24·9	21·0	19·6	19·2	21·1
Holland	45·2	31·5	—	30·9	27·4	21·1	19·4	23·0
Innswood	48·2	46·3	—	43·8	36·9	29·7	29·2	32·5
Jamaica Sugar Estates	45·8	30·7	—	31·8	33·2	30·5	34·1	33·4
Long Pond	43·1	32·5	—	31·6	26·3	23·7	22·7	27·2
Monymusk	65·4	44·0	72·2	38·6	37·0	37·2	36·3	39·3
New Yarmouth	60·0	31·8	—	36·1	32·6	28·3	30·9	36·9
Richmond/Llandovery	50·6	37·8	—	31·6	31·2	27·0	29·4	31·7
Rose Hall	—	29·8	—	24·1	23·0	22·7	26·2	24·8
Serge Island	38·4	30·6	—	27·9	25·3	24·5	27·0	27·9
Sevens	50·6	37·2	—	39·1	36·0	32·8	36·6	36·7
United Estates	43·6	40·2	—	38·9	33·7	31·7	26·2	35·0
Vale Royal	42·3	36·8	—	35·7	32·8	30·6	29·6	32·0
Worthy Park	—	35·1	—	36·4	38·6	34·8	33·3	36·0
Average	53·1	37·5	72·2	35·8	32·1	29·9	28·4	33·0

TABLE XV

TONS CANE PER TON THEORETICAL 96° SUGAR FOR ESTATES BY CANE CLASS

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old cane	Average
Appleton	9·22	8·29	—	7·67	7·64	7·76	7·73	7·86
Barnett	8·04	7·71	—	7·88	7·70	7·64	7·65	7·73
Bernard Lodge	7·39	7·75	—	7·88	8·00	7·89	7·74	7·83
Caymanas	8·66	8·64	—	8·09	8·33	8·65	9·03	8·48
Frome	9·01	8·29	—	7·79	7·96	8·01	8·42	8·12
Gray's Inn Central	9·45	9·89	—	9·59	9·56	9·68	9·70	9·68
Hampden	7·71	8·24	—	7·77	7·68	7·60	7·67	7·71
Holland	9·24	9·10	—	8·87	8·34	8·67	9·27	9·00
Innswood	9·92	8·94	—	8·61	8·84	8·51	8·59	8·66
Jamaica Sugar Estates	8·09	9·04	—	8·51	8·29	8·67	8·75	8·63
Long Pond	9·90	9·10	—	8·86	8·66	8·56	8·47	8·80
Monymusk	9·11	9·39	8·71	9·12	9·00	9·00	8·82	9·08
New Yarmouth	8·07	8·92	—	8·28	8·46	8·67	8·69	8·38
Richmond/Llandovery	8·42	8·94	—	8·90	8·69	7·83	8·15	8·51
Rose Hall	—	8·17	—	7·90	7·94	7·93	7·91	7·97
Serge Island	7·52	8·13	—	7·88	7·94	8·76	7·92	7·93
Sevens	8·34	9·00	—	8·35	8·38	8·93	8·84	8·70
United Estates	8·06	7·98	—	7·79	7·78	7·82	7·65	7·83
Vale Royal	9·02	8·45	—	8·71	8·00	8·46	8·58	8·42
Worthy Park	—	7·84	—	7·31	7·17	7·00	7·12	7·22
Average	8·38	8·74	8·71	8·45	8·34	8·38	8·52	8·46

TABLE XVI

TONS THEORETICAL 96° SUGAR PER ACRE FOR ESTATES BY CANE CLASS

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old cane	Average
Appleton	3·71	3·96	—	4·15	3·43	3·08	3·11	3·64
Barnett	6·72	4·75	—	4·38	3·43	3·00	3·18	3·62
Bernard Lodge	6·55	4·06	—	4·09	3·66	3·40	3·16	3·74
Caymanas	7·15	4·44	—	4·84	4·37	4·08	3·91	4·70
Frome	5·04	4·29	—	4·73	3·88	3·48	2·97	3·75
Gray's Inn Central	4·25	3·37	—	3·54	3·53	3·27	3·25	3·38
Hampden	3·23	3·13	—	3·21	2·74	2·58	2·51	2·73
Holland	4·89	3·46	—	3·49	3·29	2·43	2·10	2·56
Innswood	4·86	5·18	—	5·09	4·17	3·49	3·40	3·75
Jamaica Sugar Estates	5·66	3·40	—	3·73	4·01	3·52	3·89	3·88
Long Pond	4·35	3·57	—	3·56	3·04	2·77	2·68	3·09
Monymusk	7·18	4·69	6·69	4·22	4·11	4·14	4·13	4·32
New Yarmouth	7·44	3·57	—	4·36	3·85	3·27	3·55	4·40
Richmond/Llandovery	6·01	4·23	—	3·56	3·59	3·45	3·61	3·72
Rose Hall	—	3·65	—	3·05	2·90	2·86	3·31	3·11
Serge Island	5·11	3·76	—	3·63	3·18	2·97	3·41	3·52
Sevens	6·07	4·13	—	4·68	4·29	3·67	4·15	4·22
United Estates	5·41	5·04	—	5·00	4·33	4·05	3·42	4·46
Vale Royal	4·69	4·36	—	4·10	4·10	3·61	3·45	3·86
Worthy Park	—	4·48	—	4·97	5·38	4·97	4·68	4·98
Average	6·33	4·30	6·69	4·22	3·85	3·57	3·33	3·90

TABLE XVII

(*a*) Area on each estate in the different classes of cane expressed as a percentage of the total area reaped on each estate.
(*b*) The area in each ecological group according to cane class expressed as a percentage of the overall area reaped in each cane class.
(*c*) The average age of cane reaped on each estate and in each cane class.

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old cane	Average length of growth in months
Appleton	2	24	—	19	37	13	6	11·61
Barnett	3	7	—	17	23	16	34	11·86
Frome	1	19	—	17	10	25	29	10·95
Holland	2	7	—	10	11	12	58	10·76
Wet West Estates ..	8	36	—	20	17	28	27	—
Hampden	3	4	—	17	22	16	39	12·54
Long Pond	9	7	—	15	17	19	34	11·28
Rose Hall	—	17	—	25	26	19	13	11·93
Vale Royal	2	7	—	11	22	31	27	12·14
Dry North Coast ..	10	9	—	11	14	15	15	—
Bernard Lodge	5	5	—	20	29	13	27	10·97
Caymanas	12	1	—	24	29	17	17	12·58
Innswood	1	7	—	7	13	12	61	12·43
Monymusk	2	15	0·2	32	24	16	10	12·18
New Yarmouth	18	3	—	17	27	18	18	13·44
Sevens	2	11	—	22	8	19	37	11·86
Irrigated Estates ..	63	37	100	55	51	39	35	—
Gray's Inn Central ..	0·3	10	—	16	12	18	44	12·00
Jamaica Sugar Estates ..	4	7	—	11	16	12	50	11·91
Richmond/Llandovery ..	3	13	—	19	25	11	29	12·10
Serge Island	12	10	—	21	20	24	12	12·76
Wet East Estates ..	15	11	—	10	11	11	20	—
United Estates	5	19	—	18	27	16	14	13·37
Worthy Park	—	14	—	15	29	29	13	11·53
Central Ests.—Medium Rainfall..	4	7	—	4	7	7	3	—
Overall Average ..	4	12	0·04	20	21	18	25	—
Average length of growth in months	17·46	12·34	19·92	11·82	11·83	11·48	11·26	11·90

TABLE XVIII

Cwts. Theoretical 96° Sugar per Acre per Month for Estates by Cane Class

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old cane	Average
Appleton	5·36	6·44	—	7·26	6·01	5·48	5·82	6·26
Barnett	8·03	8·55	—	7·36	5·80	5·19	5·42	6·11
Bernard Lodge	7·78	6·29	—	7·64	6·81	6·47	6·18	6·81
Caymanas	8·47	7·19	—	7·87	7·30	6·98	6·65	7·48
Frome	5·64	7·52	—	8·53	6·96	6·31	5·83	6·85
Gray's Inn Central	5·31	5·98	—	5·97	6·39	5·48	5·32	5·63
Hampden	3·69	4·77	—	5·14	4·38	3·96	4·18	4·36
Holland	6·67	5·69	—	6·28	6·16	4·71	4·00	4·76
Innswood	4·74	6·76	—	6·70	6·24	6·11	5·78	6·04
Jamaica Sugar Estates	6·78	6·22	—	5·23	7·05	6·21	6·80	6·51
Long Pond	5·44	6·09	—	6·26	5·68	5·41	5·00	5·47
Monymusk	8·04	7·22	8·40	7·22	6·70	7·01	7·16	7·09
New Yarmouth	8·10	5·38	—	6·81	6·09	5·61	5·80	6·55
Richmond/Llandovery	6·45	6·60	—	5·74	6·06	6·05	6·30	6·15
Rose Hall	—	5·53	—	5·31	4·95	4·83	5·67	5·22
Serge Island	5·59	5·79	—	5·76	5·38	5·09	5·77	5·52
Sevens	6·12	6·82	—	8·00	7·54	6·44	7·06	7·12
United Estates	7·03	8·31	—	8·09	7·00	6·73	5·67	7·22
Vale Royal	6·28	6·92	—	6·73	6·80	5·97	5·79	6·26
Worthy Park	—	7·21	—	9·09	9·50	8·70	7·88	8·65
Average	7·26	6·97	8·40	7·15	6·51	6·22	5·92	6·54

TABLE XIX

Distribution of Fertilizers

Acres Fertilized % Total Acres Reaped for Plants and Ratoons by Ecological Groups 1952–1956

Groups	Nitrogen		Phosphate		Potash	
	Plants	Ratoons	Plants	Ratoons	Plants	Ratoons
1952						
Wet West	98	99	32	7	87	90
North Coast	96	93	2	0·6	74	75
Irrigated	95	99	4	7	6	11
Wet East	80	95	23	0·5	37	10
Central	90	97	49	26	82	70
1953						
Wet West	99	99	43	12	94	95
North Coast	93	94	—	1	74	77
Irrigated	94	98	3	4	8	12
Wet East	92	93	24	2	25	15
Central	99	100	18	33	99	90
1954						
Wet West	98	99	56	10	87	95
North Coast	69	73	2	1	53	58
Irrigated	96	96	3	5	18	16
Wet East	83	99	45	4	28	2
Central	100	100	42	24	99	98
1955						
Wet West	96	98	41	13	94	95
North Coast	100	99	2	8	17	17
Irrigated	100	96	24	8	59	33
Wet East	100	99	1	1	77	72
Central	100	99	2	25	100	80
1956						
Wet West	98	99	28	13	97	96
North Coast	99	98	—	2	71	23
Irrigated	99	100	2	3	20	15
Wet East	88	98	11	10	51	41
Central	100	98	43	25	100	94

TABLE XX

Percentage Acreage Fertilized with Nitrogen for Each Cane Class 1952–1956

Crop year	Plants		Mean	Ratoons			
	Fall	Spring		1st	2nd	3rd	Old
1952	92	95	94	99	98	97	96
1953	97	94	96	97	99	98	96
1954	94	90	92	94	93	92	97
1955	97	99	98	98	99	98	98
1956	96	99	98	100	99	99	98

TABLE XXI

Average N, P_2O_5, K_2O Applications for Plants and Ratoons by Ecological Groups 1952–1956

(lbs. per acre)

Groups		1952			1953			1954			1955			1956		
		N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Wet West	Plants	71	48	112	65	47	103	56	34	92	56	45	99	48	36	73
	Ratoons	69	21	99	65	22	102	61	22	101	60	31	94	49	26	82
North Coast	Plants	39	21	64	36	—	71	29	12	72	32	11	81	36	—	73
	Ratoons	40	20	64	37	22	64	31	12	58	32	12	83	32	45	70
Irrigated	Plants	89	33	106	96	15	80	99	21	74	101	19	78	105	56	89
	Ratoons	96	38	99	96	15	77	95	16	70	100	19	71	97	52	96
Wet East	Plants	68	37	72	61	39	64	75	34	68	78	21	77	68	32	76
	Ratoons	87	11	55	64	24	70	83	33	61	87	28	81	77	31	91
Central	Plants	64	44	89	67	31	90	57	38	85	72	28	87	71	32	85
	Ratoons	81	37	104	61	32	80	62	34	63	64	27	90	71	26	93

APPENDIX II

EXPERIMENT DATA

PART 1

RESULTS OF FERTILIZER EXPERIMENTS

A summary of the results of the fertilizer experiments reaped in 1956 is presented below. Actual yields, in tons cane per acre, % sucrose or Pol % cane and tons sugar per acre or tons pol per acre obtained by control are quoted, and yields obtained from the various levels of fertilizer are expressed as a percentage of control. The variety used in each experiment is also noted.

N.B.—The term "cut back" used in the case of certain fall plant experiments indicates that although planted in the fall of a particular year the cane was reaped the *following* crop, thus shortening the usual growing period.

(*a*) FORMAL AND DISPERSED BLOCK EXPERIMENTS

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
1. Appleton—Appleton—Stephen Piece 2 (3x3x3 NPK) (B37172)	0	2	4	0	2	4	0	1	2				
Fall Plants													
Cane	35·1	110	115	37·0	104	104	36·9	103	105	8·3	9·0	—	—
Sucrose ..	14·0	100	99	14·1	99	98	13·9	100	100	3·1	—	—	—
Sugar	4·9	110	113	5·2	103	103	5·2	103	105	11·8	9·6	—	—
1st Ratoons													
Cane	22·5	133	158	26·8	108	119	27·7	103	115	13·1	17·1	14·3	—
Pol% cane ..	15·4	105	103	15·7	101	101	15·9	100	98	3·7	3·9	—	—
Pol	3·4	140	164	4·2	110	122	4·4	104	114	13·1	17·7	14·5	
2nd Ratoons													
Cane	15·4	167	197	22·8	106	107	20·7	120	125	14·6	22·7	—	16·9
Pol %cane ..	17·9	99	100	17·9	97	103	17·9	101	98	6·4	—	—	—
Pol	2·8	167	197	4·1	103	111	3·7	121	124	18·8	29·2	—	21·7
2. Appleton—Appleton—Coffee Piece (Dispersed Blocks 3x3x3 NPK) (B41227)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	34·0	100	101	33·0	107	103	33·0	100	110				
Appleton—Appleton—Gully Piece													
Cane	29·0	105	112	28·4	116	107	30·6	97	103				
Appleton—Appleton—Robinson Piece													
Cane	24·6	103	120	24·6	114	108	26·0	102	104				
Summary:													
Cane	29·2	102	110	28·7	112	106	29·9	99	106	8·0	—	8·5	—
3. Appleton—Appleton—Blue Hole (Dispersed Blocks 3x3x3 NPK) (B41227)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	31·0	111	97	32·6	100	92	34·4	94	83				
Appleton—Appleton—Harry Piece													
Cane	21·4	100	120	16·0	156	171	22·6	104	97				
Appleton—Appleton—Mahoe Piece													
Cane	32·6	115	109	36·0	96	97	39·4	86	84				
Summary:													
Cane	28·4	109	107	28·2	109	109	32·2	93	86	17·1	—	—	—
4. Appleton—Raheen—Big Grass 3 (Dispersed Blocks 3x3x3 NPK) (B41227)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	38·8	95	124	40·0	108	101	37·2	101	131				
Appleton—Raheen—Big Grass 6													
Cane	35·2	119	117	39·0	92	112	36·0	108	122				
Appleton—Raheen—Big Grass 7													
Cane	30·0	116	88	34·0	86	82	29·8	114	91				
Summary:													
Cane	34·7	109	111	37·7	96	99	34·3	107	116	17·6	—	—	—

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
5. Appleton—Raheen—Georgia Pond (Dispersed Blocks 3x3x3 NPK) (B41227)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	33·8	110	106	35·2	99	104	31·3	103	138				
Appleton—Raheen—Lane 7													
Cane	30·2	126	122	35·3	92	105	36·7	96	90				
Appleton—Raheen—Lane 9													
Cane	29·5	115	129	39·7	73	82	36·7	96	80				
Summary:													
Cane	31·2	117	118	36·7	88	97	34·9	98	101	18·0	—	—	—
6. Appleton—Raheen—Island Bottom 3 (Dispersed Blocks 3x3x3 NPK) (B41227)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	30·7	116	119	33·0	94	118	32·0	100	120				
Appleton—Raheen—Island Bottom 6													
Cane	31·7	108	116	31·7	113	112	34·7	98	99				
Appleton—Raheen—Island Bottom 7													
Cane	30·2	114	124	33·2	98	109	29·8	110	133				
Summary:													
Cane	30·8	113	120	32·6	102	113	32·2	102	117	9·7	10·9	10·3	10·4
7. Appleton—Appleton—Big Run II (Dispersed Blocks 3x3x3 NPK) (B41227)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	18·3	124	140	19·3	124	121	21·3	102	111				
Appleton—Appleton—York Piece II													
Cane	19·0	98	98	15·7	115	145	20·0	92	90				
Appleton—Raheen—Thunder Piece													
Cane	29·2	110	118	30·3	105	111	30·5	108	106				
Summary:													
Cane	22·2	110	118	21·8	113	121	23·9	102	103	12·9	14·2	14·4	—
8. Barnett—Fairfield—Bottom Rice (3x3x3 NPK) (B37161)	0	3	6	0	4	8	0	1	2				
Spring Plants													
Cane	40·4	101	100	40·6	99	101	39·4	103	106	5·9	—	—	6·1
Sucrose ..	13·8	101	100	13·9	100	99	13·9	99	100	2·4	—	—	—
Sugar	5·6	102	101	5·7	99	100	5·5	101	106	5·9	—	—	6·0
1st Ratoons													
Cane	37·8	113	108	41·6	91	101	40·3	97	104	24·7	—	—	—
Sucrose ..	13·0	101	96	13·1	95	98	12·7	99	103	6·4	—	—	—
Sugar	4·8	115	106	5·3	84	97	5·1	96	107	19·7	—	—	—
2nd Ratoons													
Cane	14·7	102	84	13·4	97	116	13·3	107	110	28·2	—	—	—
Sucrose ..	15·3	100	100	15·4	101	97	15·4	97	101	6·8	—	—	—
Sugar	2·2	103	85	2·1	97	112	2·0	104	111	29·8	—	—	—
3rd Ratoons													
Cane	26·0	110	111	26·8	103	109	25·9	114	108	13·6	—	—	—
Sucrose ..	13·3	100	91	12·9	98	103	12·5	107	103	8·4	—	—	—
Sugar	3·5	110	101	3·4	101	113	3·2	122	111	17·5	—	—	—
9. Bernard Lodge—March Pen 28A (Dispersed Blocks 3x3x3 NPK) (B42231)	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	29·8	107	98	32·2	92	90	33·5	90	81				
Sucrose ..	12·9	98	99	12·7	102	100	13·4	91	97				
Sugar	3·9	103	97	4·1	95	98	4·5	80	78				
March Pen 28B (B42231)													
Cane	22·5	129	131	29·3	96	81	26·3	84	124				
Sucrose ..	12·9	97	103	12·9	102	99	12·4	101	109				
Sugar	2·9	124	138	3·8	100	79	3·3	85	133				
March Pen 28C (B41227)													
Cane	31·8	95	116	32·0	111	98	32·7	105	98				
Sucrose ..	11·8	103	99	11·3	108	107	12·0	101	97				
Sugar	3·8	97	113	3·6	119	106	3·9	105	97				
Summary—Spring Plants													
Cane	28·1	108	113	31·2	100	90	30·8	93	100	18·6	—	—	—
Sucrose ..	12·6	99	100	12·3	104	102	12·6	98	101	5·3	—	—	—
Sugar	3·5	109	114	3·8	105	92	3·9	90	100	21·2	—	—	—

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
10. Frome—Frome—Frome—Storer (3x3x3 NPK) (B41227)	0	1	2	0	3	6	0	1½	3				
Spring Plants													
Cane	30·4	105	101	29·7	112	101	30·1	103	105	10·4	—	—	—
Sucrose ..	12·5	98	98	12·7	94	97	12·4	98	100	5·2	—	—	—
Sugar	3·8	102	99	3·8	106	98	3·7	102	105	10·4	—	—	—
1st Ratoons													
Cane	46·4	103	99	48·1	96	96	45·8	102	105	6·7	—	—	—
Sucrose ..	13·6	95	94	13·0	102	99	12·7	104	104	3·5	—	—	—
Sugar	6·3	98	93	6·2	98	95	5·8	105	108	7·0	—	—	—
11. Frome—Shrewsbury—Friendship—Morass 3 (3x3x3 NPK) (B4362)	0	2	4	0	3	6	0	1½	3				
Fall Plants													
Cane	42·7	106	111	46·0	96	99	42·2	111	111	8·1	8·6	—	8·8
Sucrose ..	12·5	103	100	12·6	102	97	12·1	106	106	10·1	—	—	—
Sugar	5·4	107	111	5·8	98	96	5·1	117	119	8·0	8·5	—	8·9
1st Ratoons													
Cane	34·8	122	136	41·4	98	102	38·0	112	115	6·1	7·3	—	6·7
Sucrose ..	15·4	96	95	15·0	99	100	14·8	101	102	5·4	—	—	—
Sugar	5·4	116	129	6·2	97	102	5·6	113	118	4·3	5·0	—	4·8
3rd Ratoon													
Cane	32·5	113	126	38·9	89	94	32·7	117	118	6·4	7·2	6·0	7·2
Sucrose ..	14·0	98	96	13·8	99	100	13·6	101	103	4·1	—	—	—
Sugar	4·6	110	122	5·4	87	93	4·5	118	122	7·6	8·6	7·2	8·8
12. Long Pond—Cambridge—Virgo Bottom (3x3x3 NPK) (Co421)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	40·1	101	99	39·8	102	100	37·8	113	106	8·2	—	—	8·8
Sucrose ..	10·5	100	100	9·6	113	114	10·7	96	98	8·8	—	—	9·6
Sugar	4·2	101	97	3·8	116	115	4·1	107	102	14·0	—	—	—
13. Long Pond—Etingdon—Grass Hill Bottom (3x3x3 NPK) (Co421)	0	2	4	0	2	4	0	1	2				
Fall Plants													
Cane	44·1	102	107	45·3	104	97	41·7	114	112	12·1	—	—	—
Sucrose ..	12·0	96	101	11·6	102	104	12·0	100	97	7·0	—	—	—
Sugar	5·3	99	108	5·3	106	100	5·0	114	109	11·9	—	—	—
14. Long Pond—Hyde Hall—Cauca (Dispersed Blocks 3x3x3 NPK) (B42231)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	29·1	109	95	28·0	118	97	24·2	135	131				
Long Pond—Hyde Hall—Cauca													
Cane	28·1	112	116	32·0	88	100	28·8	102	118				
Long Pond—Hyde Hall—Little Cabbage													
Cane	30·9	104	96	32·5	91	95	31·4	96	100				
Summary:													
Cane	29·4	108	102	30·8	98	97	28·1	109	115	11·1	—	—	12·1
15. Long Pond—Hyde Hall—Pushon (3x3x3 NPK) (POJ2878)	0	2	4	0	2	4	0	1	2				
Fall Plants													
Cane	25·8	101	103	23·7	118	114	24·5	93	128	15·2	—	—	16·3
Sucrose ..	10·2	95	94	9·5	106	107	9·3	104	113	13·5	—	—	—
Sugar	2·7	94	95	2·3	122	118	2·3	97	144	20·9	—	—	23·9
1st Ratoons													
Cane	30·8	109	125	34·5	92	106	29·9	116	128	18·5	—	—	21·3
2nd Ratoons													
Cane	18·9	123	140	23·9	77	110	19·4	124	130	27·2	36·8	26·1	—
Sucrose ..	13·2	93	87	12·0	104	102	12·2	100	101	6·9	6·4	—	—
Sugar	2·5	115	120	2·9	81	112	2·4	124	131	29·2	—	—	—

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
16. Long Pond—Kinloss—Bamboo Pond (Dispersed Blocks 3x3x3 NPK) (Co421)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	32·2	96	110	33·3	105	92	30·2	114	113				
Long Pond—Kinloss—Bottom Holmes													
Cane	44·7	90	95	46·2	86	90	39·5	109	113				
Long Pond—Kinloss—Rose Ground													
Cane	36·1	94	96	34·3	103	102	34·1	101	106				
Summary:													
Cane	37·7	93	99	37·9	96	94	34·6	108	111	8·9	—	—	9·5
17. Monymusk—Beauchamp—Aermotor 1 (3x3x3 NPK) (B41227)	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	40·6	100	85	38·0	97	108	37·7	100	107	12·5	11·9	—	—
18. Monymusk—Monymusk—Exeter 44 (3x3x3 NPK) (B41227)	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	34·7	101	106	36·3	93	101	33·9	104	110	10·5	—	—	—
19. Monymusk—Monymusk—Exeter 45 (3x3x3 NPK) (B4362)	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	32·8	106	109	35·4	96	96	34·4	99	102	13·3	—	—	—
20. Monymusk—Morelands—Churchill 3 (3x3x3 NPK) (B42231)	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	28·5	113	114	32·8	91	94	33·1	95	87	22·2	—	—	—
21. Monymusk—Morelands—Churchill 4 (3x3x3 NPK) (Mixed)	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	32·2	93	89	30·1	106	96	31·1	91	102	13·2	—	—	—
22. Monymusk—Morelands—John Cuffy 8 (3x3x3 NPK) (B42231)	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	30·2	102	104	31·9	93	96	29·6	98	113	16·1	—	—	—
23. Monymusk—Morelands—John Cuffy 9 (3x3x3 NPK) (B42231)	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	31·4	97	105	31·7	99	101	31·9	96	102	15·9	—	—	—
24. Monymusk—Morelands—Sharpe Piece (North) (3x3x3 NPK) (B4362)	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	39·8	104	109	42·2	96	100	41·7	96	104	13·5	—	—	—
25. Monymusk—Morelands—Sharpe Piece (South) (3x3x3 NPK) (B4362)	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	42·3	110	112	43·9	108	103	43·1	105	112	17·2	—	—	—
26. Monymusk—Morelands—Tamarind Tree 1 (3x3x3 NPK) (B41227)	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	58·9	102	112	59·8	106	103	61·3	104	98	10·6	—	—	—
27. Monymusk—Mumby—Scale House 5 (3x3x3 NPK) (B42231)	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	35·6	94	93	37·6	83	89	34·7	102	91	21·9	—	—	—

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
28. Monymusk—Mumby—Scale House 6 (3x3x3 NPK) (B42231)													
	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	26·6	107	105	28·5	105	86	29·3	92	91	16·1	—	—	—
29. Monymusk—Salt Savannah—Two Sisters 6 (3x3x3 NPK) (B42231)													
	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	31·8	101	94	31·4	102	97	31·7	102	94	17·0	—	—	—
30. Monymusk—Springfield—Major II (3x3x3 NPK) (B41227)													
	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	37·5	97	104	35·3	107	112	38·2	94	101	13·5	—	—	—
31. Monymusk—Springfield—Major 6 (3x3x3 NPK) (B41227)													
	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	70·8	107	107	65·4	121	120	67·1	108	124	22·0	—	—	—
32. Monymusk—Springfield—Pump House 1 (3x3x3 NPK) (B41227)													
	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	39·9	98	98	38·8	99	101	39·2	104	98	11·4	—	—	—
33. Monymusk—Springfield—Section 4 (3x3x3 NPK) (B4362)													
	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	54·5	94	100	53·1	98	104	54·4	99	89	25·1	—	—	—
34. Richmond/Llandovery—Llandovery—Alligator Hole (3x3x3 NPK) (B37161)													
	0	2	4	0	2	4	0	1	2				
Not reaped as plants													
1st Ratoons													
Cane	34·1	111	123	35·6	113	109	36·0	112	105	19·4	—	—	—
Sucrose ..	8·2	106	106	8·6	94	105	7·8	114	112	8·6	—	—	9·4
Sugar	2·8	118	129	3·1	106	113	2·8	128	117	22·3	26·0	—	—
2nd Ratoons													
Cane	31·9	103	119	31·4	113	108	31·3	117	112	21·5	—	—	—
Sucrose ..	10·4	105	108	10·8	100	103	10·0	101	102	6·8	7·1	—	—
Sugar	3·3	110	129	3·6	106	105	3·4	119	114	25·9	—	—	—
35. Richmond/Llandovery—Llandovery—Top House 1 (3x3x3 NPK) (B4362)													
	0	2	4	0	2	4	0	1	2				
Not reaped as plants													
1st Ratoons													
Cane	40·5	91	106	39·9	98	104	38·4	111	102	13·7	—	—	—
Sucrose ..	12·6	105	98	11·6	116	112	13·3	94	93	14·3	—	15·7	—
Sugar	5·1	96	104	4·6	113	117	5·0	106	97	11·1	—	12·3	11·2
36. Richmond/Llandovery—Llandovery—Well Piece 3 (3x3x3 NPK) (B4362)													
	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	46·8	99	108	47·8	99	102	46·9	100	107	7·1	7·3	—	—
Sucrose ..	9·2	83	100	8·1	116	107	9·2	92	92	14·5	13·8	—	—
Sugar	4·3	82	108	3·9	113	109	4·3	92	99	16·5	16·0	—	—
1st Ratoons													
Cane	49·5	97	110	50·8	102	97	50·7	101	98	9·7	10·0	—	—
Sucrose ..	13·0	93	88	11·4	109	111	11·9	95	112	15·7	—	—	—
Sugar	6·4	91	97	5·8	110	106	6·0	97	109	15·0	—	—	—

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
37. Richmond/Llandovery—Richmond—Cockett 3 (Dispersed Blocks 3x3x3 NPK) (B41227)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	34·8	107	108	33·7	118	108	37·7	90	101				
Sucrose ..	11·7	109	105	12·9	94	92	12·2	98	104				
Sugar	4·1	116	113	4·3	111	100	4·6	87	105				
Richmond/Llandovery—Richmond—Hector Piece (B4362)													
Cane	35·7	103	110	37·1	102	99	36·7	100	104				
Sucrose ..	14·2	101	101	14·4	99	99	14·0	103	103				
Sugar	5·1	104	111	5·4	100	98	5·1	104	107				
Richmond/Llandovery—Richmond—Laughlands 3 (B41227)													
Cane	43·6	106	105	40·0	119	120	44·5	101	104				
Sucrose ..	14·4	90	89	13·0	105	104	13·2	101	103				
Sugar	6·3	95	94	5·2	125	125	5·8	103	108				
Summary:													
Cane	38·0	106	108	36·9	113	110	39·6	97	103	10·7	—	—	—
Sucrose ..	13·4	99	98	13·4	99	98	13·1	101	103	3·8	—	—	—
Sugar	5·1	104	104	5·0	113	108	5·2	199	107	13·5	—	—	—
38. Richmond/Llandovery—Richmond—Garden Piece (Dispersed Blocks 3x3x3 NPK) (B4362)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	40·7	103	107	41·7	102	101	41·3	106	99				
Sucrose ..	12·6	97	102	11·9	109	109	12·1	105	108				
Sugar	5·0	100	106	4·8	114	113	4·7	108	107				
Richmond/Llandovery—Richmond—Lime Kiln 3 (B41227)													
Cane	43·5	100	105	41·4	107	113	45·4	94	94				
Sucrose ..	10·2	108	117	11·0	103	98	11·1	100	97				
Sugar	4·2	108	123	4·6	110	110	5·1	96	93				
Richmond/Llandovery—Llandovery—Upper Pond (B41227)													
Cane	47·2	98	115	49·0	98	104	48·3	110	97				
Sucrose ..	12·3	102	103	12·9	91	92	11·3	112	110				
Sugar	5·6	101	119	6·3	90	95	5·5	122	106				
Summary:													
Cane	43·8	100	107	44·0	102	106	45·0	104	95	7·9	8·1	—	—
Sucrose ..	11·6	102	107	11·9	101	99	11·5	106	105	8·0	—	—	—
Sugar	5·1	103	117	5·3	102	104	5·2	110	102	9·8	11·0	—	—
39. Richmond/Llandovery—Richmond—Richmond Piece (B41227)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	78·4	103	103	77·2	106	104	8·14	96	98	6·3	—	—	—
1st Ratoons													
Cane	48·6	111	111	51·3	100	105	54·1	96	94	10·3	11·1	—	—
Sucrose ..	9·7	98	98	9·6	96	101	9·6	100	98	10·3	—	—	—
Sugar	4·7	108	108	5·1	96	105	5·2	95	92	12·9	—	—	—
2nd Ratoons													
Cane	55·1	108	105	57·5	96	103	55·2	101	111	11·3	—	—	—
Sucrose ..	8·6	98	93	8·4	100	99	7·9	109	110	15·2	—	—	—
Sugar	4·7	105	98	4·8	97	104	4·3	110	123	10·9	—	—	12·2
40. Rose Hall—Calabash II (3x3x3 NPK) (B41227)	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	44·6	100	117	46·8	100	101	47·0	97	104	3·9	4·2	—	4·0
1st Ratoons													
Cane	43·1	99	113	44·0	102	103	44·1	100	104	8·3	8·7	—	—
Pol % cane ..	19·3	97	95	17·8	108	108	19·1	98	96	8·2	—	—	—
Pol	8·3	96	100	7·8	109	106	8·0	104	105	12·1	—	—	—
41. United Estates—Enfield—Section 10 (3x3x3 NPK) (B41227)	0	2	4	0	1½	3	0	1	2				
Fall Plants													
Cane	59·9	101	101	59·7	98	105	53·0	117	124	8·1	—	—	9·2
Sucrose ..	11·3	96	97	11·6	96	89	10·8	104	102	11·2	—	—	—
Sugar	6·8	97	98	7·0	93	94	5·7	121	127	12·5	—	—	14·6
1st Ratoons													
Cane	60·9	92	99	58·5	101	101	52·7	116	120	10·5	—	—	10·5
2nd Ratoons													
Cane	52·5	92	90	48·4	102	103	44·0	114	122	18·0	—	—	20·3

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
42. United Estates—New Works—Section 6 (3x3x3 NPK) (B41227)													
	0	2	4	0	1½	3	0	1	2				
Fall Plants													
Cane	69·4	110	114	74·2	102	102	73·0	111	98	11·6	12·6	—	—
Sucrose ..	11·5	92	99	11·4	94	99	11·4	93	101	7·9	—	—	—
Sugar	8·0	100	113	8·4	96	100	8·2	103	99	11·3	11·9	—	—
				Not reaped as 1st Ratoons									
2nd Ratoons													
Cane	33·7	125	123	37·4	108	106	34·5	125	115	35·5	—	—	—
Sucrose ..	13·5	101	102	13·4	100	104	13·4	103	104	3·6	3·6	—	—
Sugar	4·6	125	126	5·0	109	111	4·6	128	120	34·8	—	—	—
43. United Estates—White Water—Section 19 (3x3x3 NPK) (B4362)													
	0	2	4	0	1	2	0	1	2				
Spring Plants													
Cane	39·4	116	121	41·6	116	103	42·0	109	108	14·3	16·1	—	—
Sucrose ..	14·3	100	101	14·3	101	100	14·4	98	100	4·6	—	—	—
Sugar	5·6	117	123	5·9	118	102	6·0	107	108	11·5	13·1	13·3	—
1st Ratoons													
Cane	31·5	129	152	38·3	107	107	38·4	107	105	8·8	8·8	—	—
Sucrose ..	14·1	102	98	14·0	102	101	14·3	96	100	5·0	—	—	—
Sugar	4·5	131	148	5·3	108	108	5·5	104	105	7·8	9·9	—	—
2nd Ratoons													
Cane	45·7	103	99	44·8	109	98	46·3	100	96	24·0	—	—	—
Sucrose ..	14·4	97	103	14·6	98	98	14·7	98	96	6·1	—	—	—
Sugar	6·6	99	102	6·5	108	96	6·8	99	92	26·6	—	—	—
44. United Estates—Windsor Park—Section 10 (4362)													
	0	2	4	0	1	2	0	1	2				
Spring Plants													
Cane	31·6	112	131	35·4	107	100	35·0	102	108	9·4	10·8	—	—
Sucrose ..	16·3	101	100	16·4	100	100	16·4	99	100	3·8	—	—	—
Sugar	5·2	111	130	5·8	106	101	5·7	101	109	9·2	10·5	—	—
1st Ratoons													
Cane	28·2	141	183	39·3	104	101	40·4	96	100	7·8	7·8	—	—
Sucrose ..	15·3	102	98	15·4	99	99	15·2	99	101	3·6	—	—	—
Sugar	4·3	144	179	6·0	102	99	6·1	95	101	8·2	11·6	—	—
2nd Ratoons													
Cane	33·3	141	150	42·8	100	104	42·7	105	100	9·0	11·7	—	—
45. Worthy Park—Pond I (Dispersed Blocks 3x3x3 NPK) (B4362)													
	1½	3	4½	0	1½	3	¾	1½	2¼				
Spring Plants													
Cane	33·7	105	111	39·4	98	99	38·0	104	103				
Sucrose ..	13·6	97	97	13·6	99	98	13·6	98	98				
Sugar	5·0	102	107	5·2	98	98	5·2	101	101				
Worthy Park—Pond II													
Cane	34·5	105	114	36·6	100	101	36·4	102	100				
Sucrose ..	13·4	99	93	13·4	96	96	13·2	101	97				
Sugar	4·6	104	106	4·9	96	96	4·8	104	98				
Worthy Park—Pond III													
Cane	31·1	105	110	30·3	110	112	33·6	90	102				
Sucrose ..	12·9	101	98	13·3	94	97	13·1	96	98				
Sugar	4·0	105	107	4·0	104	108	4·4	86	100				
Summary:													
Cane	34·2	105	111	35·4	102	103	36·0	99	102	4·9	5·2	—	—
Sucrose ..	13·3	99	96	13·3	97	97	13·3	98	98	3·3	—	—	—
Sugar	4·6	104	107	4·7	99	100	4·8	97	99	6·3	6·5	—	—

(*b*) MISCELLANEOUS FERTILIZER EXPERIMENTS

(i) LATE N APPLICATION

46. Richmond/Llandovery—Richmond—Chester Walk (B3439)

	No extra N	2 cwt. S/A/acre Applied at 6 months	Urea ≡ 1 cwt. S/A/acre Applied at 6 months
2nd Ratoons			
Cane	26·3	112	110
Sucrose	9·7	128	137
Sugar	2·6	137	147

47. Sevens—Sandy Gully 9 (B34104)

	No extra N	2 cwt. S/A/acre Applied at 6 months	S.E. % g.m.	Significant difference
4th Ratoons				
Cane	23·6	109	5·1	5·7
Sucrose	12·2	104	3·7	4·0
Sugar	2·9	114	5·8	6·8

(ii) SULPHATE OF AMMONIA VS. AQUEOUS AMMONIA EXPERIMENTS

48. Caymanas—Lorne 8D (Tractor application: aqueous ammonia vs. sulphate of ammonia) (B4362)

	Sulphate of ammonia			Aqueous ammonia			
	0	2½	5	2½	5	S.E. % g.m.	Significant difference
1st Ratoons							
Cane	25·4	106	112	102	112	7·3	—

49. Frome—Meylersfield—Mitchell (sulphate of ammonia vs. aqueous of ammonia) (B4362)

	Sulphate of ammonia			Aqueous ammonia			
	0	2½	5	2½	5	S.E. % g.m.	Significant difference
1st Ratoons							
Cane	26·8	138	149	124	127	10·9	19·1
Sucrose	14·4	99	98	100	98	3·1	—
Sugar	3·9	134	148	124	124	10·9	18·9

50. Frome—Meylersfield—Peter Plain (Sulphate of ammonia vs. aqueous ammonia)

	Su phate of ammonia			Aqueous ammonia			
	0	2½	5	2½	5	S.E. % g.m.	Significant difference
3rd Ratoons							
Cane	24·6	115	132	119	124	14·9	—
Sucrose	15·3	105	102	104	99	3·8	—
Sugar	3·7	122	136	125	124	14·2	—

51. Frome—Meylersfield—Village (Sulphate of ammonia vs. aqueous ammonia) (B41227)

	Sulphate of ammonia		Aqueous ammonia			
	2½	5	2½	5	S.E. % g.m.	Significant difference
1st Ratoon						
Cane	33·6	117	83	99	7·5	11·8
Sucrose	14·1	99	105	98	3·8	—
Sugar	4·8	116	87	97	7·3	11·6

52. Frome—Meylersfield—West Flat (Sulphate of ammonia vs. aqueous ammonia) (B41227)

	Sulphate of ammonia			Aqueous ammonia			
	0	2½	5	2½	5	S.E. % g.m.	Significant difference
Spring Plants							
Cane	14·6	105	151	139	136	19·0	—
Sucrose	13·4	106	102	104	99	5·7	—
Sugar	2·0	112	153	143	132	16·6	—

53. Jamaica Sugar Estates—Duckenfield 14 (Sulphate of ammonia vs. aqueous ammonia) (B37172)

	Sulphate of ammonia			Aqueous ammonia			
	0	3½	5	3½	5	S.E. % g.m.	Significant difference
3rd Ratoons							
Cane	19·0	181	187	133	143	10·0	21·6

54. Richmond/Llandovery—Richmond—Chambermaid (Sulphate of ammonia vs. aqueous ammonia) (B3439)

	Sulphate of ammonia			Aqueous ammonia			
	0	2½	5	2½	5	S.E. % g.m.	Significant difference
3rd Ratoons							
Cane	15·2	143	183	132	145	8·2	16·0

55. Vale Royal—Swanswick—South Common 4 (Sulphate of ammonia vs. aqueous ammonia) (Co331)

	Sulphate of ammonia			Aqueous ammonia			
	0	1	2	1	2	S.E. % g.m.	Significant difference
3rd Ratoons							
Cane	30·5	107	113	105	107	10·2	—

(iii) SULPHATE OF AMMONIA VS. UREA

56. Richmond/Llandovery—Richmond—Chester Walk (Sulphate of ammonia vs. urea) (B3439)

	Control	S/A	Urea
	Normal Appn. (N)	N+ 1 cwt. at 6 months	N+ 0·46 cwt. at 6 months
2nd Ratoons			
Cane	26·3	112	110
Sucrose	9·7	128	137
Sugar	5·2	137	147

57. Jamaica Sugar Estates—Chiswick 3 (B4362)

	(A) Cwt. per acre			Local phosphate							
				Cwt. per acre			Mean cwt. per acre				
	18% superphosphate			18% superphosphate			18% superphosphate				
	0	2	4	2	4	6	2	4	6	S.E. % g.m.	Significant difference
	Direct effect on plants										A
Fall Plants											
Cane	27·6	111	116							11·1	12·1
1st Ratoons		(A)			(B)					A	A B
Cane	31·3	105	107	31·1	104	110				6·3	— 6·5
Sucrose	16·6	96	101	16·1	103	102				7·2	— —
Sugar	5·2	100	108	5·0	108	113				5·7	5·8 6·0
		A			B			C			A B C
2nd Ratoons											
Cane	34·8	100	99	33·4	105	106	32·5	113	106	5·0	— — —
Sucrose	13·3	100	99	13·4	101	97	13·2	103	99	3·7	— — —
Sugar	4·6	100	98	4·5	106	104	4·3	116	106	4·6	— — 5·0

(v) ARTIFICIAL AND ORGANIC AND LIMING EXPERIMENTS

58. Frome—Belle Isle—Meylersfield—Lime Kiln—(Bagasse, knifing and nitrogen) (B41227)

	Tons per acre bagasse				Knifing		Cwt. per acre Sulphate of ammonia		S.E. % g.m.		Significant difference		
	0	10	20	30	0	1	3	6	A	B	B	K	N
Fall Plants													
Cane	38·1	91	90	82	30·9	124	31·7	118	15·5	10·2	—	10·8	6·8
Sucrose	13·9	98	101	100	14·0	99	14·0	99	3·9	2·8	—	—	—
Sugar	5·3	90	91	82	4·3	122	4·4	116	13·1	3·6	10·4	9·0	2·5
1st Ratoons													
Cane	43·0	100	103	100	42·7	103	41·0	112	6·9	6·5	—	—	4·4
Sucrose	13·5	100	100	100	13·4	101	13·7	98	3·3	3·9	—	—	2·4
Sugar	5·8	100	103	100	5·7	105	5·6	109	6·4	5·7	—	3·7	4·1

59. Frome—Masemure—Albany—Cotton Tree (Liming, bagasse, N, knifing, cross knifing) (B41227)

	Tons per acre bagasse			Knifing		Cwt. per acre Sulphate of ammonia		Liming		S.E. % g.m.			Significant difference			
	0	15	30	1	2	3	6	0	1	B	K	N	B	K	N	L
Spring Plants																
Cane	40·8	95	90	39·5	96	37·2	108	37·7	100	7·6	8·2	9·2	6·8	—	5·1	—
Sucrose	12·4	98	96	12·1	101	12·1	101	12·4	99	7·6	6·8	5·3	—	—	—	—
Sugar	5·1	92	87	4·8	97	4·5	110	4·7	99	11·5	12·8	9·9	10·1	—	5·5	—

60. Frome—Masemure—Albany—Old Town (Liming, bagasse, N, knifing, cross knifing) (B41227)

	Tons per acre bagasse			Knifing		Cwt. per acre Sulphate of ammonia		Liming		S.E. % g.m.			Significant difference		
	0	15	30	1	2	3	6	0	1	B	K	N	B	K	N
Spring Plants															
Cane	36·9	97	89	34·2	106	34·1	106	36·1	97	15·3	8·8	10·5	9·3	—	—
Sucrose	11·7	104	103	12·1	98	11·9	103	12·1	100	6·0	7·0	5·5	—	—	—
Sugar	4·4	101	91	4·2	104	4·1	103	4·4	98	15·7	13·5	12·7	—	—	—

61. Holland—Factory Piece (2x2x2x2x2 NPK FPM Lime) (B4362)

	Cwt. S/A per acre		Cwt. 18% super per acre		Cwt. M/P per acre		Ton FPM per acre		Ton lime per acre		S.E. % g.m.	Significant difference				
	0	3	0	4	0	2	0	15	0	10		N	P	K	F	L
Spring Plants																
Cane	30·8	108	32·0	100	31·8	102	29·6	116	32·8	96	11·2	—	—	—	9·1	—
Sucrose	12·6	97	12·7	95	12·6	96	12·6	96	12·4	100	3·2	—	—	—	—	—
Sugar	3·9	105	4·0	96	4·0	98	3·7	111	4·0	96	10·3	—	—	—	8·3	—
1st Ratoons																
Cane	34·6	101	33·8	105	33·2	109	33·7	106	34·7	100	13·3	—	—	—	—	—
2nd Ratoons																
Cane	34·2	106	33·8	109	32·8	116	32·9	115	34·9	103	8·0	—	6·4	6·6	6·5	—
% Pol	17·0	100	17·4	96	17·1	99	17·4	95	17·0	100	8·0	—	—	—	—	—
Pol	5·8	106	5·9	104	5·6	114	5·7	109	5·9	102	11·9	—	—	9·7	—	—
3rd Ratoons																
Cane	23·8	118	24·8	110	23·4	121	25·2	105	26·4	96	9·1	7·5	7·2	7·7	—	—
Sucrose	18·1	100	18·3	99	18·3	98	18·2	99	18·1	100	8·5	—	—	—	—	—
Sugar	4·3	118	4·5	109	4·3	119	4·6	105	4·8	97	13·2	11·0	—	11·0	—	—

62. Innswood—St. Helen's—Section 9c (B41227)

	Tons bagasse per acre				S.E. % g.m.	Significant difference
	0	10	20	30		
Standover Spring						
Cane	71·7	105	101	96	10·3	—
Sucrose	10·1	106	100	98	9·4	—
Sugar	7·3	110	101	94	15·1	—

63. Monymusk—Exeter—Section 24 (2(2x2) NP bagasse filter press mud) (B41227)

	Cwt./S/A per acre		Cwt. 18% super per acre		Tons bagasse per acre		Tons FPM per acre		S.E. % g.m.	Significant difference			
	0	4	0	4	0	50	0	50					
Fall Plants													
Cane	59·1	106	58·6	108	58·5	108	58·5	108	18·4	—	—	—	—
Sucrose	7·2	103	8·1	104	8·5	94	8·3	98	6·8	—	—	—	—
Sugar	4·3	110	4·2	111	4·5	101	4·3	106	18·7	—	—	—	—
1st Ratoons													
Cane	34·6	99	31·9	116	33·3	107	33·7	105	28·2	—	—	—	—
Sucrose	10·5	94	10·3	96	10·2	99	10·4	95	6·1	—	—	—	—
Sugar	3·6	93	3·3	113	3·4	106	3·5	100	26·1	—	—	—	—
2nd Ratoons													
Cane	51·0	98	53·7	88	51·1	98	45·6	122	35·9	—	—	—	—
Sucrose	10·6	96	10·5	97	10·5	98	10·2	103	6·3	—	—	—	—
Sugar	5·3	95	5·6	86	5·4	94	4·6	126	31·7	—	—	—	—
3rd Ratoons													
Cane	38·9	99	38·7	100	36·2	114	35·8	116	7·9	—	—	11·7	11·8

(vi) OTHER MATERIALS

(a) VELAN

64. Caymanas—Caymanas—"C" Piece (B4362)

	Cane			% Sucrose			Sugar		
Fall Plants	F_0	F_1	Mean	F_0	F_1	Mean	F_0	F_1	Mean
V_0	75·7	94	73·3	11·9	110	12·5	9·1	105	9·3
V_1	108	123	119	102	104	98	110	132	118
Mean	78·7	104		12·1	106		9·5	113	
S.E. % g.m.		12·6			8·8			12·4	
	Velan	Fertilizer		Velan	Fertilizer		Velan	Fertilizer	
Sig. Diff.	15·6	—		—	—		—	—	

V_0 = No velan. V_1 = Velan applied at 100 gallons per plot.
F_0 = No fertilizer. F_1 = 4 cwt. S/A + 1 cwt. M/P per acre.

(b) FLOTAL

65. United Estates—Whitewater 5 (B41227)

Spring Plants	No flotal	10 cwt. flotal per acre
Cane	47·2	104
Sucrose	12·7	100
Sugar	6·0	104

PART 2

VARIETY X FERTILIZER EXPERIMENTS

1. Caymanas—Caymanas "T" Piece (Variety x N x K)

CANE

Variety	Cwt. per acre sulphate of ammonia: 0	3	6	Cwt. per acre muriate of potash: 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia: 0	3	6
Fall Plants											
B3439 ..	66·9	101	95	66·0	92	108	66·1	0	71·0	119	89
B4362 ..	118	139	124	136	126	125	129	1	107	104	113
B42231 ..	120	108	104	96	131	109	112	2	111	104	102
Mean ..	75·5	103	95	73·0	105	103	—	—	—	—	—
S.E. % g.m. ..			16·2								
	Variety			N		K					
Sig. Diff. ..	18·4			—		—					

SUCROSE

Cwt. per acre sulphate of ammonia: 0	3	6	Cwt. per acre muriate of potash: 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia: 0	3	6
12·5	96	92	12·0	96	100	12·0	0	12·6	95	102
105	101	97	102	98	109	105	1	101	102	90
101	108	102	105	107	105	108	2	103	106	47
12·8	100	95	12·5	99	103	—	—	—	—	—
S.E. % g.m. ..			6·1							
	Variety			N		K				
Sig. Diff. ..	—			—		—				

SUGAR

Variety	Cwt. per acre sulphate of ammonia: 0	3	6	Cwt. per acre muriate of potash: 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia: 0	3	6
Fall Plants											
B3439	8·4	97	87	7·9	90	111	8·0	0	9·0	114	90
B4362	123	141	120	90	126	139	135	1	108	107	102
B42231	123	115	105	111	143	117	121	2	115	110	99
Mean	9·7	102	90	9·1	104	106	—	—	—	—	—
S.E. % g.m.				11·8							
	Variety			N		K					
Sig. Diff.	14·7			—		—					

CANE

Variety	Cwt. per acre sulphate of ammonia: 0	3	6	Cwt. per acre muriate of potash: 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia: 0	3	6
1st Ratoons											
B3439	28·0	134	126	31·7	112	106	33·6	0	33·0	144	151
B4362	151	190	203	168	165	148	151	1	112	163	159
B42231	144	192	204	143	174	160	150	2	123	131	144
Mean	36·9	130	135	43·4	110	101	—	—	—	—	—
S.E. % g.m.				10·0							
	Variety			N		K					
Sig. Diff.	14·3			13·0		—					

CANE

Variety	Cwt. per acre sulphate of ammonia: 0	3	6	Cwt. per acre muriate of potash: 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia: 0	3	6
2nd Ratoons											
B3439 ..	17·6	160	186	27·0	97	95	26·3	0	31·9	143	123
B4362 ..	243	291	270	168	177	181	180	1	99	125	149
B42231 ..	215	274	261	164	166	161	168	2	110	134	126
Mean ..	33·3	128	127	38·8	102	101	—	—	—	—	—
S.E. % g.m. ..			15·6								
	Variety			N		K					
Sig. Diff. ..	24·9			19·9		—					

SUCROSE

Cwt. per acre sulphate of ammonia: 0	3	6	Cwt. per acre muriate of potash: 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia: 0	3	6
14·6	99	100	14·5	100	101	14·6	0	15·4	94	100
110	109	108	109	112	110	109	1	95	101	98
97	102	102	103	101	99	101	2	96	100	96
14·9	101	101	15·1	100	99	—	—	—	—	—
S.E. % g.m. ..			6·7							
	Variety			N		K				
Sig. Diff. ..	7·4			—		—				

SUGAR

Variety	Cwt. per acre sulphate of ammonia: 0	3	6	Cwt. per acre muriate of potash: 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia: 0	3	6
2nd Ratoons											
B3439	2·6	159	185	3·9	97	97	3·8	0	5·0	133	123
B4362	209	317	290	182	198	199	197	1	95	126	144
B42231	267	279	267	170	170	161	170	2	105	135	120
Mean	5·0	131	129	5·9	103	101	—	—	—	—	—
S.E. % g.m.				15·3							
	Variety			N		K					
Sig. Diff.	25·0			20·0		—					

2. Frome—Masemure—Long Corner (Variety x N x K)

CANE

Variety	Cwt. per acre sulphate of ammonia: 0	3	6	Cwt. per acre muriate of potash: 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia: 0	3	6
Fall Plants											
B37161 ..	52·7	95	95	47·6	114	107	50·9	0	69·0	103	104
B41227 ..	112	111	124	123	124	136	120	1	97	104	110
B42231 ..	89	94	101	108	100	107	98	2	106	103	108
B4362 ..	96	104	103	113	113	109	104				
Mean ..	52·3	103	106	52·9	102	103					
S.E. % g.m. ..			7·2								
	Variety			N		K					
Sig. Diff. ..	8·0			—		—					

SUCROSE

Cwt. per acre sulphate of ammonia: 0	3	6	Cwt. per acre muriate of potash: 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia: 0	3	6
11·4	106	114	11·3	114	109	12·2	0	9·6	98	105
113	105	105	109	114	102	100	1	109	96	109
121	121	117	126	118	119	112	2	98	109	95
125	121	126	126	128	122	116	—	—	—	—
13·0	99	101	12·9	103	99			—	—	—
S.E. % g.m. ..			6·1							
	Variety			N		K				
Sig. Diff. ..	6·0			—		—				

SUGAR

Variety	Cwt. per acre sulphate of ammonia 0	3	6	Cwt. per acre muriate of potash 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia 0	3	6
Fall Plants											
B37161	6·1	101	107	5·4	129	117	6·2	0	9·0	100	107
B41227	124	117	130	135	143	140	121	1	104	97	119
B42231	107	114	117	136	117	127	110	2	99	110	100
B4362	119	125	129	141	145	133	121				
Mean	6·8	101	107	6·9	104	101					
S.E. % g.m.			6·2								
	Variety		N		K						
Sig. Diff.	7·3		5·8		—						

CANE

Variety	Cwt. per acre sulphate of ammonia 0	3	6	Cwt. per acre muriate of potash 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia 0	3	6
1st Ratoons											
B37161 ..	28·3	125	116	28·0	126	117	32·1	0	38·8	132	134
B41227 ..	129	150	165	138	154	157	131	1	113	147	130
B42231 ..	111	132	140	132	125	130	113	2	126	131	155
B4362 ..	125	155	153	136	135	166	127	—	—	—	—
Mean ..	32·8	121	124	35·4	107	112	—				
S.E. % g.m. ..			8·7								
	Variety		N		K						
Sig. Diff. ..	8·7		7·3		6·8						

SUCROSE

Cwt. per acre sulphate of ammonia 0	3	6	Cwt. per acre muriate of potash 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia 0	3	6
13·4	92	96	12·1	108	111	12·8	0	9·9	99	97
98	95	99	109	106	108	102	1	101	95	102
98	100	101	111	107	112	104	2	100	99	100
100	99	96	110	110	104	103	—	—	—	—
13·2	97	99	13·0	101	101	—				
S.E. % g.m. ..			2·9							
	Variety		N		K					
Sig. Diff. ..	1·4		1·2		—					

SUGAR

Variety	Cwt. per acre sulphate of ammonia 0	3	6	Cwt. per acre muriate of potash 0	1	2	Mean	M/P	Cwt. per acre sulphate of ammonia 0	3	6
1st Ratoons											
B37161	3·8	114	111	3·3	137	131	4·1	0	5·1	132	131
B41227	125	142	163	152	165	170	132	1	115	140	132
B42231	108	131	141	148	136	148	117	2	125	130	155
B4362	123	153	145	152	152	175	130	—	—	—	—
Mean	4·3	118	123	4·6	107	113	—				
S.E. % g.m.			10·4								
	Variety		N		K						
Sig. Diff.	9·5		7·8		7·3						

3. Worthy Park—Blythe Piece 1 (Variety x Nitrogen)

CANE

Variety	Cwt. per acre Sulphate of ammonia 0	2	4	6	Mean
Spring Plants					
B41227	36·7	116	116	120	41·5
B42231	90	92	99	104	97
B43214	117	106	115	118	101
B4362	87	107	112	113	93
Mean	36·1	107	113	115	—
S.E. % g.m.		7·2			
	Nitrogen		Variety		
Sig. Diff.	8·3		7·2		
1st Ratoons					
B41227	43·9	127	109	109	48·9
B42231	68	88	77	85	71
B43214	99	132	124	125	108
B4362	71	92	128	115	91
Mean	37·0	130	130	129	—
S.E. % g.m.		16·5			
	Nitrogen		Variety		
Sig. Diff.	20·3		15·3		
2nd Ratoons					
B41227	44·3	108	108	107	46·8
B42231	81	73	75	77	72
B43214	105	105	90	101	95
B4362	78	85	93	85	81
Mean	40·2	102	101	102	—
S.E. % g.m.		10·3			
	Nitrogen		Variety		
Sig. Diff.	—		9·5		

SUCROSE

Variety	Cwt. per acre Sulphate of ammonia 0	2	4	6	Mean
Spring Plants					
B41227	11·9	91	82	89	10·7
B42231	104	103	98	95	110
B43214	87	92	91	85	98
B4362	102	112	105	107	117
Mean	11·6	101	96	96	—
S.E. % g.m.		5·9			
	Nitrogen		Variety		
Sig. Diff.	—		6·7		
1st Ratoons					
B41227	13·6	100	99	87	13·1
B42231	98	93	93	91	97
B43214	104	95	106	104	106
B4362	106	100	98	101	105
Mean	13·9	95	94	94	—
S.E. % g.m.		5·0			
	Nitrogen		Variety		
Sig. Diff.	—		5·4		
2nd Ratoons					
B41227	12·2	97	103	107	12·4
B42231	109	102	109	104	104
B43214	104	96	107	99	100
B4362	117	111	103	105	107
Mean	13·1	95	98	97	—
S.E. % g.m.		7·5			
	Nitrogen		Variety		
Sig. Diff.	—		—		

SUGAR

Variety	Cwt. per acre Sulphate of ammonia 0	2	4	6	Mean
Spring Plants					
B41227	4·3	107	98	109	4·4
B42231	95	97	99	101	95
B43214	105	100	106	102	100
B4362	90	121	120	123	110
Mean	4·2	109	109	112	—
S.E. % g.m.		7·0			
	Nitrogen		Variety		
Sig. Diff.	8·0		7·6		
1st Ratoons					
B41227	5·9	127	109	94	6·4
B42231	66	82	73	78	69
B43214	104	125	132	131	114
B4362	75	92	125	117	95
Mean	5·1	124	127	122	—
S.E. % g.m.		14·7			
	Nitrogen		Variety		
Sig. Diff.	18·6		14·8		
2nd Ratoons					
B41227	5·3	104	112	116	5·8
B42231	88	75	83	81	76
B43214	110	102	96	103	95
B4362	92	95	96	91	87
Mean	5·2	97	99	100	—
S.E. % g.m.		11·3			
	Nitrogen		Variety		
Sig. Diff.	—		10·7		

PART 3

RESULTS OF VARIETY EXPERIMENTS

A summary of the results of the variety experiments reaped in 1956 is presented below. Actual yields in tons cane per acre, % sucrose (or pol % cane*) and tons sugar per acre (or tons pol per acre*) obtained by the standard variety, are quoted, and the yields obtained from the other varieties are expressed as a percentage of the standard.

(*a*) COMPARISON OF COMMERCIAL VARIETIES

IRRIGATED ESTATES

Variety	Cane					Pol % Cane* or Sucrose					Pol* or Sugar				
	P.	1st R.	2nd R.	3rd R.	4th R.	P.	1st R.	2nd R.	3rd R.	4th R.	P.	1st R.	2nd R.	3rd R.	4th R.
1. Innswood—St. Helen's 16 (spring planted 1951)															
B34104	31·9	39·0	—	30·0	29·1	12·6	—	—	14·8	11·1	4·1	—	—	4·4	3·2
B41227	116	113	—	114	117	89	—	—	93	99	103	—	—	103	115
B42231	98	103	—	108	103	110	—	—	92	104	107	—	—	98	106
B4362	91	97	—	95	96	108	—	—	107	106	99	—	—	99	102
S.E. % g.m. ..	6·6	4·7	—	14·7	9·6	9·3	—	—	10·9	5·7	10·5	—	—	15·7	12·0
Sig. Diff.	—	7·8	—	—	—	—	—	—	—	—	—	—	—	—	—
2. Monymusk—Hillside—Ladell 3 (fall planted 1952)															
B3439 ..	58·9	44·4	22·8			7·0	—	8·4			4·1	—	1·9		
B41227 ..	123	86	187			93	—	91			117	—	168		
B42231 ..	111	82	100			112	—	97			124	—	97		
B4362 ..	103	85	157			92	—	96			97	—	149		
POJ2878 ..	103	77	100			90	—	99			93	—	101		
MY3 ..	71	73	92			96	—	102			69	—	94		
S.E. % g.m. ..	15·9	10·7	13·3			10·9	—	11·4			17·0	—	16·4		
Sig. Diff. ..	19·5	10·8	19·7			14·0	—	—			20·5	—	23·2		
3. New Yarmouth—Caswell Hill—Section 39 (fall planted 1952)															
B3439 ..	59·8	23·3	25·5			14·3	15·9*	15·7			8·6	3·7	4·0		
B37161 ..	144	151	147			86	98	89			124	149	129		
B41227 ..	146	164	184			93	97	89			135	159	161		
B42231 ..	127	177	158			102	100	84			129	176	130		
B4362 ..	127	152	161			98	101	100			123	153	159		
S.E. % g.m. ..	13·8	18·1	22·0			8·7	6·4	3·9			13·8	13·1	20·4		
Sig. Diff. ..	24·4	37·2	45·5			—	—	6·4			—	26·5	38·2		
4. Sevens—Parnassus—Section 82 (spring planted 1952)															
B3439 ..	34·4	22·1	38·6	23·3		11·9	12·1*	14·2*	14·9		4·0	2·7*	5·5*	3·5	
B37161 ..	92	121	137	118		102	93	109	94		95	112	149	111	
B41227 ..	75	136	142	129		89	98	102	97		68	132	145	125	
B42231 ..	91	133	136	135		98	103	103	92		91	139	141	125	
B4362 ..	118	130	111	122		98	113	104	99		117	145	114	120	
S.E. % g.m. ..	7·0	15·7	13·1	13·0		5·0	11·1	9·3	3·6		13·7	20·0	16·3	12·3	
Sig. Diff. ..	9·2	—	22·4	23·1		—	—	—	—		17·8	—	29·1	—	
5. Sevens—Parnassus—Sandy Gully 1 (spring planted 1954)															
B3439 ..	26·4	34·1				—	—				—	—			
B41227 ..	127	118				—	—				—	—			
B42231 ..	90	101				—	—				—	—			
B4362 ..	164	125				—	—				—	—			
S.E. % g.m. ..	44·0	6·9				—	—				—	—			
Sig. Diff. ..	—	13·2				—	—				—	—			

Variety	Cane P.	Cane 1st R.	Cane 2nd R.	Cane 3rd R.	Pol % Cane* or Sucrose P.	Pol % Cane* or Sucrose 1st R.	Pol % Cane* or Sucrose 2nd R.	Pol % Cane* or Sucrose 3rd R.	Pol* or Sugar P.	Pol* or Sugar 1st R.	Pol* or Sugar 2nd R.	Pol* or Sugar 3rd R.
6. Appleton—Raheen—Salmon Piece (fall planted 1952)												
B37161 ..	67·6	38·5			12·3	15·6*			8·3	6·0*		
B37172 ..	96	101			109	95			105	95		
B41227 ..	116	138			98	96			113	132		
B42231 ..	100	113			106	110			106	124		
B43214 ..	108	124			90	95			98	118		
B4362 ..	101	103			106	103			107	107		
S.E. % g.m. ..	5·7	9·1			6·0	4·8			8·5	11·2		
Sig. Diff. ..	7·2	10·9			9·9	5·7			—	15·1		
7. Frome—Belle Isle—Meylersfield—Butchers Clump (spring planted 1955)												
B37161 ..	21·4				13·4				2·9			
B41227 ..	125				106				133			
B42231 ..	114				98				111			
B4362 ..	130				100				131			
S.E. % g.m. ..	4·4				5·1				8·6			
Sig. Diff. ..	9·0				—				17·7			
8. Frome—Shrewsbury—Shrewsbury—Top Cabbage (spring planted 1955)												
B37161 ..	30·5				13·9				4·2			
B41227 ..	113				89				100			
B42231 ..	89				105				93			
B4362 ..	118				108				128			
S.E. % g.m. ..	6·3				3·1				7·1			
Sig. Diff. ..	11·5				5·4				13·0			
9. Serge Island—Pasture Piece (spring planted 1954)												
B37172 ..	35·9	37·2			—	15·1			—	5·6		
B4362 ..	104	95			—	111			—	106		
S.E. % g.m. ..	8·7	12·6			—	5·9			—	12·6		
Sig. Diff. ..	—	—			—	4·4			—	—		
DRY NORTH COAST AREA												
10. Barnett—Fairfield—Golf Course (spring planted 1954)												
B37161 ..	32·9	26·0			13·4	12·7			4·4	3·3		
B41227 ..	136	135			94	89			129	121		
B4362 ..	137	146			101	98			140	143		
B47361 ..	129	119			88	88			111	104		
S.E. % g.m. ..	6·9	11·5			5·4	5·5			9·1	9·8		
Sig. Diff. ..	14·9	24·8			8·9	8·9			19·0	19·9		
11. Long Pond—Hyde Hall—Cashew (spring planted 1953)												
B37161 ..	23·4	36·1	30·9		—	—	—		—	—	—	
B41227 ..	144	115	123		—	—	—		—	—	—	
B42231 ..	136	98	108		—	—	—		—	—	—	
B4362 ..	105	103	120		—	—	—		—	—	—	
B47361 ..	77	87	103		—	—	—		—	—	—	
B47419 ..	79	66	78		—	—	—		—	—	—	
Co331 ..	119	113	90		—	—	—		—	—	—	
POJ2878 ..	90	75	114		—	—	—		—	—	—	
S.E. % g.m. ..	14·6	17·8	9·2		—	—	—		—	—	—	
Sig. Diff. ..	22·9	24·7	14·1		—	—	—		—	—	—	

Variety	Cane				Pol % Cane* or Sucrose				Pol* or Sugar			
	P.	1st R.	2nd R.	3rd R.	P.	1st R.	2nd R.	3rd R.	P.	1st R.	2nd R.	3rd R.
12. Long Pond—Long Pond—Brown Piece (fall planted 1954)												
B42231 ..	95				117				111			
B49396 ..	80				103				83			
BJ235 (B52405)	96				97				94			
BJ443 (B52408)	97				87				84			
Co331 ..	48·8				8·1				3·9			
Co421 ..	82				98				80			
S.E. % g.m. ..	9·6				13·6				17·6			
Sig. Diff. ..	12·6				—				19·7			
13. Long Pond—Long Pond—Fisher (fall planted 1952)												
B3439 ..	13·2	30·5	21·5		8·8	—	13·8		1·2	—	4·0	
B37161 ..	91	109	106		108	—	101		97	—	106	
B37172 ..	123	115	124		115	—	96		140	—	120	
B41227 ..	124	138	179		87	—	92		108	—	164	
B42231 ..	147	146	156		116	—	98		170	—	153	
B4362 ..	142	143	178		80	—	95		113	—	170	
Co421 ..	120	132	142		98	—	93		117	—	132	
S.E. % g.m. ..	10·1	6·4	11·7		10·0	—	6·5		16·1	—	14·6	
Sig. Diff. ..	13·3	8·8	18·0		10·9	—	—		21·2	—	22·7	
14. Long Pond—Long Pond—Old House (fall planted 1954)												
B37161 ..	35·5				10·8				3·1			
B37172 ..	112				104				116			
B42231 ..	93				117				109			
B49198 ..	134				79				105			
BJ64 (B52402)	60				96				59			
May336 ..	66				121				80			
S.E. % g.m. ..	11·2				9·7				13·6			
Sig. Diff. ..	13·9				13·1				16·9			
15. Richmond/Llandovery—Llandovery—Big Morass (fall planted 1952)												
B3439 ..	59·7	27·1	21·9		14·3	13·8	13·2		8·5	3·7	2·9	
B37161 ..	104	143	133		80	103	103		84	148	136	
B41227 ..	156	200	180		77	100	94		124	202	170	
B42231 ..	123	164	164		80	111	109		99	182	178	
B4362 ..	122	160	160		86	99	109		100	160	175	
B44254 ..	155	127	135		59	88	87		92	112	120	
B46293 ..	119	136	114		62	91	92		90	125	106	
B46384 ..	116	114	151		88	114	95		103	130	143	
S.E. % g.m. ..	12·4	16·9	11·2		11·3	7·1	10·1		22·1	19·1	16·3	
Sig. Diff. ..	18·0	28·3	18·4		14·1	8·4	11·6		—	32·4	26·9	
16. Rose Hall—Calabash II (spring planted 1954)												
B3439 ..	24·6	22·6			—	19·4			—	4·4		
B37161 ..	100	115			—	98			—	112		
B41227 ..	142	175			—	102			—	175		
B4362 ..	121	153			—	115			—	175		
Co331 ..	126	162			—	95			—	151		
Co421 ..	131	136			—	95			—	129		
S.E. % g.m. ..	12·1	16·7			—	11·5			—	18·2		
Sig. Diff. ..	17·4	30·9			—	—			—	33·6		

(*b*) VARIETY SELECTION EXPERIMENTS

(i) FINAL STAGE TRIALS. "FIRST 500" SEEDLINGS

(INCOMPLETE BLOCK)

NOTE.—Actual yields are quoted for the standard variety, with the yields of the other varieties expressed as a percentage of the standard.

| Variety | CANE | | | | | | | | | | | | | | | | | | | | % SUCROSE | | | | | | | | | | | | | | | | | | | | SUGAR | | | | | | | | | | | | | | | | | | | PLANTS | | | 1ST RATOONS | | |
|---|---|---

(ii) FIRST STAGE LATTICE EXPERIMENTS. "SECOND 500" SEEDLINGS

NOTE.—Actual yields are quoted for the standard variety, with the yields of the other varieties expressed as a percentage of the standard.

Variety	Cane															% Sucrose																							Sugar											Average										
	(a) 1	(b) 1	2	3	(a) 4	(b) 4	5	(a) 6	(b) 6	(a) 7	(b) 7	8	9	10	11	(a) 1	(b) 1	2	3	(a) 4	(b) 4	5	(a) 6	(b) 6	(a) 7	(b) 7	8	9	10	11	(a) 1	(b) 1	2	3	(a) 4	(b) 4	5	(a) 6	(b) 6	(a) 7	(b) 7	8	9	10	11	Cane	Plants % Suc.	Sugar	Cane	Ratoons % Suc.	Sugar
Standard	65·3	21·2	50·7	35·2	26·7	39·5	29·4	47·5	39·3	58·0	40·5	67·3	30·8	74·9	28·9	15·3	15·3	12·2	13·6	15·3	15·2	—	15·2	12·0	9·9	10·4	10·0	10·0	12·1	13·2	4·9	3·2	6·4	4·8	4·2	5·4	—	7·2	4·7	5·7	4·5	6·1	3·0	9·1	3·8	—	123 (2)	80 (1)	88 (1)	—	—	—
B41257	—	—	—	—	—	—	135	—	—	—	—	—	—	110	—	—	—	—	—	—	—	—	—	—	—	—	—	—	80	—	—	—	—	—	—	—	—	—	58	56	—	—	—	88	—	92 (2)	93 (1)	58 (1)	55 (1)	105 (1)	56 (1)
B42231	—	—	—	—	—	—	122	—	—	62	55	—	—	—	—	—	—	—	—	—	—	—	—	—	93	105	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	104 (3)	116 (3)	115 (2)	—	—	—
B4362	—	—	85	—	—	—	120	—	—	—	—	—	106	—	—	—	—	107	—	—	—	—	—	—	—	—	125	—	—	—	—	—	—	92	—	—	—	—	—	31	2	—	138	—	—	—	57 (2)	102 (2)	44 (2)	28 (2)	110 (2)	22 (2)
B48125	84	41	—	—	—	—	—	—	—	30	14	—	—	—	—	104	108	—	—	—	—	—	—	—	107	111	—	—	—	—	—	89	41	—	—	—	—	—	—	—	24	10	—	—	—	—	63 (3)	102 (2)	44 (2)	38 (2)	102 (2)	30 (2)
B48126	67	50	—	—	—	—	100	—	—	21	25	—	—	—	—	93	96	—	—	—	—	—	—	—	111	107	—	—	—	—	—	64	50	—	—	—	—	—	—	—	—	—	—	—	—	114 (1)	—	—	—	—	—
B49166	—	—	—	—	—	—	114	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	94 (9)	80 (8)	75 (8)	103 (4)	83 (4)	87 (4)
B49198	103	100	77	—	88	102	117	120	138	70	70	97	83	91	—	79	74	79	—	79	88	—	61	81	56	89	107	96	84	—	81	72	59	—	69	93	—	73	109	40	75	118	80	76	—	83 (6)	97 (6)	81 (6)	84 (2)	97 (2)	82 (2)
B49229	—	—	85	—	76	73	—	104	94	—	—	94	54	83	—	—	—	107	—	95	92	—	91	102	—	—	99	108	81	—	—	—	86	—	71	62	—	—	—	—	—	93	98	—	89 (3)	99 (3)	88 (3)	—	—	—
B49311	—	—	79	—	—	—	—	—	—	—	—	—	87	100	—	—	—	95	—	—	—	—	—	—	—	—	—	105	98	—	—	—	72	—	—	—	—	118	132	—	—	94	57	102	—	94 (8)	99 (7)	89 (7)	89 (3)	101 (3)	91 (3)
B49353	96	69	91	—	91	75	104	123	124	—	—	88	46	116	—	101	100	103	—	90	95	—	96	108	—	—	93	120	87	—	101	69	91	—	82	75	—	89	100	—	—	102	80	90	—	84 (6)	103 (6)	85 (6)	102 (1)	99 (1)	100 (1)
B49355	—	—	78	—	—	—	89	101	102	—	—	90	67	78	—	—	—	99	—	—	—	—	88	99	—	—	110	117	103	—	—	—	73	—	—	—	—	—	—	—	—	85	71	90	—	79 (5)	99 (5)	79 (5)	103 (1)	86 (1)	89 (1)
B49377	—	—	69	—	94	103	—	—	—	—	—	79	60	92	—	—	—	101	—	87	86	—	—	—	—	—	95	115	98	—	—	—	69	—	79	89	—	82	134	79	96	91	97	70	—	94 (8)	89 (7)	81 (7)	104 (3)	104 (3)	109 (3)
B49396	—	—	85	—	86	108	104	110	131	88	77	89	82	108	—	—	—	98	—	83	92	—	83	105	91	114	91	118	64	—	—	—	81	—	70	98	—	71	122	—	—	107	66	95	—	84 (6)	94 (6)	77 (6)	126 (2)	90 (2)	111 (2)
B49397	—	—	58	—	90	108	—	112	144	—	—	92	57	93	—	—	—	96	—	83	92	—	64	87	—	—	102	119	100	—	—	—	51	—	73	98	—	—	—	—	—	—	127	73	—	85 (4)	108 (4)	94 (4)	67 (1)	100 (1)	69 (1)
B50014	—	—	76	—	82	67	—	—	—	—	—	—	95	87	—	—	—	109	—	97	100	—	—	—	—	—	—	140	85	—	—	—	85	—	79	69	—	—	—	—	112	—	—	—	105 (3)	76 (3)	82 (3)	101 (2)	74 (2)	77 (2)
B50032	—	—	—	—	83	91	—	128	111	—	—	103	—	—	—	—	—	—	—	75	72	—	57	76	—	—	97	—	—	—	—	—	—	66	—	72	103	—	122	168	—	—	104	79	—	92 (5)	98 (5)	89 (5)	130 (2)	103 (2)	136 (2)
B50037	—	—	74	—	84	113	—	121	147	—	—	—	83	97	—	—	—	99	—	87	92	—	101	113	—	—	—	123	81	—	—	—	—	—	—	—	—	95	124	—	—	—	—	—	127 (1)	76 (1)	95 (1)	162 (1)	77 (1)	124 (1)
B50041	—	—	—	—	—	—	—	127	162	—	—	—	—	—	—	—	—	—	—	—	—	—	75	77	—	—	—	—	—	—	—	—	—	—	—	—	—	97	97	—	—	109	76	—	94 (4)	95 (4)	87 (4)	108 (1)	89 (1)	97 (1)
B50073	—	—	71	—	—	—	—	115	108	—	—	—	100	91	—	—	—	101	—	—	—	—	84	89	—	—	—	108	85	—	—	—	67	—	—	—	—	—	—	—	—	34	67	—	73 (4)	88 (4)	61 (4)	69 (1)	91 (1)	61 (1)
B50141	—	—	91	—	69	69	—	—	—	—	—	—	34	98	—	—	—	96	—	85	91	—	—	—	—	—	—	103	68	—	—	—	85	—	57	63	—	—	—	—	—	89	99	98	—	91 (6)	102 (6)	93 (6)	110 (2)	99 (2)	110 (2)
B50153	—	—	86	—	84	97	—	119	123	—	—	71	85	103	—	—	—	106	—	97	93	—	99	105	—	—	101	112	94	—	—	—	84	—	81	94	—	108	127	—	—	111	—	—	—	102 (2)	98 (2)	103 (2)	106 (1)	78 (1)	82 (1)
B50155	—	—	—	—	—	—	—	107	106	—	—	97	—	—	—	—	—	—	—	—	—	—	90	78	—	—	105	—	—	—	—	—	—	—	—	—	96	82	—	—	111	—	—	—	—	—	—	—	—	—	—	—
B50184	—	—	—	—	—	—	—	—	—	—	—	70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	83	—	—	70 (1)	100 (1)	82 (1)	—	—	—
B50210	—	—	78	—	—	—	104	—	—	—	—	—	82	92	—	—	—	92	—	—	—	—	—	—	—	—	—	120	88	—	—	—	67	—	—	—	—	—	—	—	—	—	101	78	—	89 (4)	100 (3)	82 (3)	—	—	—
B50345	—	—	—	—	—	—	—	—	—	—	—	102	—	—	—	—	—	—	—	—	—	—	—	—	—	—	98	—	—	—	—	—	—	—	—	—	—	—	—	107	—	—	—	102 (1)	98 (1)	107 (1)	—	—	—
B50347	—	—	88	—	98	98	—	—	—	—	—	—	70	114	—	—	—	93	—	74	84	—	—	—	—	—	—	131	95	—	—	—	86	—	71	88	—	—	—	—	—	—	93	48	—	93 (4)	98 (4)	89 (4)	98 (1)	84 (1)	88 (1)
B50377	—	—	63	—	66	81	—	107	114	—	—	79	65	103	—	—	—	107	—	90	95	—	93	105	—	—	105	128	83	—	—	—	67	—	58	79	—	99	120	—	—	84	89	87	—	80 (6)	101 (6)	81 (6)	98 (2)	100 (2)	99 (2)
B5121	—	—	—	114	—	—	—	—	—	—	—	—	—	—	131	—	—	—	94	—	—	—	—	—	—	—	—	—	—	72	—	—	—	106	—	—	—	—	—	—	—	—	—	95	123 (2)	83 (2)	101 (2)	—	—	—
B5142	—	—	—	98	—	—	—	—	—	—	—	—	—	—	70	—	—	—	95	—	—	—	—	—	—	—	—	—	—	93	—	—	—	94	—	—	—	—	—	—	—	—	—	—	84 (2)	94 (2)	80 (2)	—	—	—
B5143	—	—	—	97	—	—	—	—	—	—	—	—	—	—	93	—	—	—	76	—	—	—	—	—	—	—	—	—	—	70	—	—	—	74	—	—	—	—	—	—	—	—	65	95 (2)	73 (2)	70 (2)	—	—	—
B51116	—	—	—	97	—	—	—	—	—	—	—	—	—	—	97	—	—	—	96	—	—	—	—	—	—	—	—	—	—	98	—	—	—	93	—	—	—	—	—	—	—	—	87	97 (2)	97 (2)	90 (2)	—	—	—
B51131	—	—	—	105	—	—	—	—	—	—	—	—	—	—	118	—	—	—	108	—	—	—	—	—	—	—	—	—	—	103	—	—	—	114	—	—	—	—	—	—	—	—	122	112 (2)	106 (2)	118 (2)	—	—	—
B51134	—	—	—	104	—	—	—	—	—	—	—	—	—	—	116	—	—	—	96	—	—	—	—	—	—	—	—	—	—	78	—	—	—	101	—	—	—	—	—	—	—	—	91	110 (2)	87 (2)	96 (2)	—	—	—
B51259	—	—	—	105	—	—	—	—	—	—	—	—	—	—	102	—	—	—	92	—	—	—	—	—	—	—	—	—	—	81	—	—	—	96	—	—	—	—	—	—	—	—	83	104 (2)	87 (2)	89 (2)	—	—	—
B51360	—	—	—	112	—	—	—	—	—	—	—	—	—	—	106	—	—	—	90	—	—	—	—	—	—	—	—	—	—	84	—	—	—	93	—	—	—	—	—	—	—	—	89	109 (2)	83 (2)	91 (2)	—	—	—
B51367	—	—	—	112	—	—	—	—	—	—	—	—	—	—	87	—	—	—	90	—	—	—	—	—	—	—	—	—	—	95	—	—	—	98	—	—	—	—	—	—	—	—	83	100 (2)	93 (2)	91 (2)	—	—	—
B51374	—	—	—	117	—	—	—	—	—	—	—	—	—	—	104	—	—	—	92	—	—	—	—	—	—	—	—	—	—	73	—	—	—	105	—	—	—	—	—	—	—	—	77	110 (2)	83 (2)	91 (2)	—	—	—
52† (B52401)*	89	76	—	—	—	—	97	85	27	26	93	—	—	—	—	89	96	—	—	—	—	—	90	88	73	74	97	—	—	—	82	71	—	—	—	—	—	87	78	20	11	103	—	—	—	77 (4)	87 (4)	73 (4)	62 (3)	86 (3)	53 (3)
64† (B52403)*	84	54	—	—	94	79	—	107	98	70	49	97	97	—	—	101	108	—	—	—	—	—	103	102	105	108	97	100	—	—	—	87	66	—	—	78	68	—	110	104	73	59	101	—	—	—	90 (5)	99 (5)	90 (5)	70 (4)	101 (4)	74 (4)
70† (B52403)*	59	56	—	—	61	88	—	—	—	42	34	111	—	—	—	92	96	—	—	—	—	—	92	87	—	—	99	108	97	—	—	—	66	56	—	—	49	77	—	—	—	40	31	118	—	—	—	68 (4)	93 (4)	66 (4)	59 (3)	97 (3)	55 (3)
77† (B52404)*	50	58	—	—	—	—	—	—	—	19	6	—	—	—	—	87	84	—	—	—	—	—	—	—	87	94	—	—	—	—	—	43	50	—	—	—	—	—	—	—	16	19	—	—	—	—	35 (2)	87 (2)	30 (2)	32 (2)	89 (2)	35 (2)
235† (B52405)*	104	87	—	—	74	95	—	128	126	107	101	92	—	—	—	95	99	—	—	—	84	91	—	90	89	83	95	100	—	—	—	100	89	—	—	62	87	—	115	112	97	96	104	—	—	—	101 (5)	90 (5)	94 (5)	102 (4)	94 (4)	96 (4)
370† (B52406)*	70	79	—	—	64	94	—	96	114	42	54	—	—	—	—	93	85	—	—	—	85	88	—	98	88	82	84	—	—	—	—	66	63	—	—	55	84	—	94	97	34	46	—	—	—	—	68 (4)	90 (4)	62 (4)	85 (4)	86 (4)	72 (4)
433† (B52407)*	107	101	—	—	101	108	—	122	118	66	57	94	—	—	—	86	95	—	—	—	91	92	—	91	98	82	105	97	—	—	—	90	89	—	—	91	103	—	111	116	54	60	99	—	—	—	98 (5)	89 (5)	89 (5)	96 (4)	98 (4)	94 (4)
443† (B52408)*	91	77	—	—	87	104	—	—	—	58	70	—	—	—	—	76	74	—	—	—	77	87	—	—	—	67	92	—	—	—	—	72	57	—	—	66	93	—	—	—	39	61	—	—	—	—	79 (3)	73 (3)	59 (3)	84 (3)	84 (3)	70 (3)
450† (B52409)*	111	90	—	—	—	—	—	—	—	56	63	93	—	—	—	87	92	—	—	—	—	—	—	—	—	90	108	101	—	—	—	101	85	—	—	—	—	—	—	—	50	62	98	—	—	—	87 (3)	93 (3)	83 (3)	77 (2)	100 (2)	74 (2)
21	—	—	—	118	—	—	—	—	—	—	—	—	—	—	132	—	—	—	93	—	—	—	—	—	—	—	—	—	—	81	—	—	—	109	—	—	—	—	—	—	—	—	107	125 (2)	87 (2)	108 (2)	—	—	—
35	—	—	—	90	—	—	—	—	—	—	—	—	—	—	83	—	—	—	91	—	—	—	—	—	—	—	—	—	—	67	—	—	—	82	—	—	—	—	—	—	—	—	56	87 (2)	79 (2)	68 (2)	—	—	—
84	—	—	—	86	—	—	—	—	—	—	—	—	—	—	85	—	—	—	96	—	—	—	—	—	—	—	—	—	—	97	—	—	—	93	—	—	—	—	—	—	—	—	83	96 (2)	97 (2)	83 (2)	—	—	—
114	—	—	—	93	—	—	—	—	—	—	—	—	—	—	109	—	—	—	81	—	—	—	—	—	—	—	—	—	—	71	—	—	—	75	—	—	—	—	—	—	—	—	78	101 (2)	88 (2)	77 (2)	—	—	—
172	—	—	—	88	—	—	—	—	—	—	—	—	—	—	99	—	—	—	108	—	—	—	—	—	—	—	—	—	—	103	—	—	—	97	—	—	—	—	—	—	—	—	102	93 (2)	106 (2)	100 (2)	—	—	—
206	—	—	—	105	—	—	—	—	—	—	—	—	—	—	64	—	—	—	83	—	—	—	—	—	—	—	—	—	—	83	—	—	—	86	—	—	—	—	—	—	—	—	53	85 (2)	83 (2)	70 (2)	—	—	—
214	—	—	—	90	—	—	—	—	—	—	—	—	—	—	67	—	—	—	106	—	—	—	—	—	—	—	—	—	—	87	—	—	—	96	—	—	—	—	—	—	—	—	59	79 (2)	97 (2)	78 (2)	—	—	—
287	—	—	—	109	—	—	—	—	—	—	—	—	—	—	91	—	—	—	95	—	—	—	—	—	—	—	—	—	—	89	—	—	—	104	—	—	—	—	—	—	—	—	81	100 (2)	92 (2)	93 (2)	—	—	—
311	—	—	—	113	—	—	—	—	—	—	—	—	—	—	98	—	—	—	95	—	—	—	—	—	—	—	—	—	—	90	—	—	—	109	—	—	—	—	—	—	—	—	88	106 (2)	93 (2)	99 (2)	—	—	—
335	—	—	—	79	—	—	—	—	—	—	—	—	—	—	81	—	—	—	111	—	—	—	—	—	—	—	—	—	—	92	—	—	—	85	—	—	—	—	—	—	—	—	74	80 (2)	102 (2)	80 (2)	—	—	—
343	—	—	—	96	—	—	—	—	—	—	—	—	—	—	99	—	—	—	98	—	—	—	—	—	—	—	—	—	—	95	—	—	—	94	—	—	—	—	—	—	—	—	84	98 (2)	89 (2)	89 (2)	—	—	—
365	—	—	—	115	—	—	—	—	—	—	—	—	—	—	114	—	—	—	91	—	—	—	—	—	—	—	—	—	—	86	—	—	—	107	—	—	—	—	—	—	—	—	97	115 (2)	89 (2)	102 (2)	—	—	—
377	—	—	—	112	—	—	—	—	—	—	—	—	—	—	124	—	—	—	83	—	—	—	—	—	—	—	—	—	—	75	—	—	—	94	—	—	—	—	—	—	—	—	93	118 (2)	79 (2)	94 (2)	—	—	—
464	—	—	—	93	—	—	—	—	—	—	—	—	—	—	105	—	—	—	99	—	—	—	—	—	—	—	—	—	—	91	—	—	—	93	—	—	—	—	—	—	—	—	96	99 (2)	95 (2)	95 (2)	—	—	—
Co331	—	—	—	—	—	—	128	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	128 (1)	—	—	—	—	—
MAY336	75	80	—	—	—	—	97	92	116	56	55	—	—	—	—	118	115	—	—	—	—	—	109	117	131	117	—	—	—	—	90	82	—	—	—	—	—	100	120	74	62	—	—	—	—	80 (4)	119 (3)	88 (3)	84 (3)	116 (3)	88 (3)
M112/34	—	—	58	—	73	75	65	113	103	—	—	111	76	81	—	—	—	97	—	77	86	—	82	88	—	—	102	117	79	—	—	—	58	—	55	68	—	93	104	—	—	125	90	65	—	82 (7)	92 (6)	81 (6)	89 (2)	87 (2)	86 (2)
M134/132	76	58	56	—	77	83	83	110	115	—	—	73	87	95	—	86	88	95	—	82	88	—	89	83	—	—	108	126	87	—	68	53	49	—	62	75	—	98	92	—	—	92	113	82	—	82 (8)	96 (7)	81 (7)	85 (3)	87 (3)	74 (3)
M213/40	—	—	71	—	—	—	113	99	—	—	—	—	81	76	—	—	—	96	—	—	—	—	65	79	—	—	—	—	68	—	—	—	64	—	—	—	—	74	88	—	—	—	93	49	—	85 (4)	85 (4)	70 (4)	99 (1)	79 (1)	88 (1)
NCo310	—	—	95	—	99	89	—	125	137	—	—	99	66	102	—	—	—	112	—	90	84	—	102	127	—	—	101	109	104	—	—	—	105	—	88	80	—	127	170	—	—	111	73	106	—	98 (6)	102 (6)	102 (6)	113 (2)	106 (2)	125 (2)
NCo330	—	—	71	—	80	96	—	—	—	—	—	100	67	93	—	—	—	99	—	97	99	—	—	—	—	—	107	126	89	—	—	—	72	—	76	96	—	—	—	—	—	108	89	83	—	82 (5)	104 (5)	86 (5)	96 (1)	99 (1)	96 (1)
POJ3016	—	—	54	—	—	—	63	59	72	—	—	—	63	61	—	—	—	95	—	—	—	—	98	114	—	—	—	130	91	—	—	—	53	—	—	—	58	77	—	—	—	88	58	—	60 (5)	104 (4)	63 (4)	72 (1)	114 (1)	77 (1)
PK1060	—	—	72	—	75	78	—	—	—	—	—	55	73	94	—	—	—	98	—	90	96	—	—	—	—	—	108	131	80	—	—	—	69	—	97	76	—	—	—	—	—	104	102	76	—	80 (5)	101 (5)	84 (5)	78 (1)	96 (1)	76 (1)
S.E. % g.m.	13·7	17·2	16·9	5·6	11·9	11·9	17·9	11·8	8·9	23·4	20·1	17·1	28·1	15·9	9·0	12·2	4·3	7·1	7·4	9·3	11·8	—	—	—	—	11·7	31·3	7·4	13·3	19·2	—	16·6	15·3	23·1	9·1	15·1	13·4	—	—	—	29·5	30·1	16·9	29·2	27·2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sig. Diff.	16·8	20·2	21·7	9·1	16·5	18·2	31·9	14·9	17·3	18·3	13·6	26·6	34·5	25·3	—	14·5	6·5	11·9	3·1	7·8	—	—	—	—	—	13·5	—	12·7	—	28·1	—	17·6	15·3	28·8	3·0	18·1	5·3	—	—	—	19·2	21·4	29·0	43·4	37·5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

1. Appleton—Appleton—Wash House (a).
1. Appleton—Appleton—Wash House (b).
2. Bernard Lodge—Salt Pond—Section 43.
3. Frome—Frome—Barham—Andrews 3.
4. Frome—Mint—Mt. Eagle—Hill Piece (a).
4 Frome—Mint—Mt. Eagle—Hill Piece (b).
5. Hampden—Gayles Valley—Crown Piece.
6. Jamaica Sugar Estates—Golden Grove 27 (a).
6. Jamaica Sugar Estates—Golden Grove 27 (b).
7. Long Pond—Steelfield—Somers (a).
7. Long Pond—Steelfield—Somers (b).
8. New Yarmouth—New Yarmouth—Section 14.
9. Serge Island—Serge—Lorraine Piece.
10. United Estates—Windsor Park—Nursery.
11. Worthy Park—Pond 1.

Figures in brackets under "Average" column represent number of experiments from which averages were obtained.

† Temporary Jamaican identification.
* Permanent "B" numbers.
(a) = Plants.
(b) = 1st Ratoons.

PART 4

VARIETY X CULTIVATION

(i) Variety x Spacing Experiments

1. Appleton—Raheen—Lane 5

CANE

Fall Plants:	A	B	C	D	E	F	Close spacing	Wide spacing	Mean
B37161	43·6	103	78	101	92	93	41·2	100	41·2
B41227	118	113	103	113	114	114	119	119	119
B4362	89	90	85	89	86	89	90	95	93
Close spacing	44·9	96	86	98	96	95	—	—	—
Wide spacing	99	103	86	98	94	97	—	—	—
Mean	104	103	90	102	99	43·0	42·6	101	—

	Drains	Varieties	Spacing
S.E. % g.m.	17·7	15·0	11·6
Sig. Diff.	—	6·5	—

CANE

1st Ratoons:	A	B	C	D	E	F	Close spacing	Wide spacing	Mean
B37161	28·7	106	95	92	83	94	27·6	97	27·2
B41227	116	119	110	106	116	117	122	114	120
B4362	107	117	86	93	107	125	112	107	112
Close spacing	32·1	102	89	89	93	101	—	—	—
Wide spacing	92	101	84	84	88	98	—	—	—
Mean	96	102	87	87	91	32·0	30·8	95	—

	Drains	Varieties	Spacing
S.E. % g.m.	20·1	18·5	5·9
Sig. Diff.	3·0	8·5	1·9

SUCROSE

1st Ratoons:	A	B	C	D	E	F	Close spacing	Wide spacing	Mean
B37161	13·7	96	94	100	103	99	13·4	101	13·5
B41227	97	95	99	94	100	99	99	99	99
B4362	99	101	105	109	104	103	102	108	105
Close spacing	13·1	102	105	102	107	102	—	—	—
Wide spacing	105	101	103	109	107	108	—	—	—
Mean	98	97	99	101	102	13·7	13·5	102	—

	Drains	Varieties	Spacing
S.E. % g.m.	9·3	8·7	5·9
Sig. Diff.	—	3·7	2·0

SUGAR

	A	B	C	D	E	F	Close spacing	Wide spacing	Mean
B37161	3·9	103	89	91	84	93	3·7	98	3·6
B41227	111	111	108	100	115	114	119	113	121
B4362	104	115	89	100	111	130	114	116	117
Close spacing	4·2	104	93	91	100	104	—	—	—
Wide spacing	97	103	87	92	95	108	—	—	—
Mean	93	100	86	86	93	4·4	4·1	100	—

	Drains	Varieties	Spacing
S.E. % g.m.	21·8	21·4	8·1
Sig. Diff.	—	10·0	—

A = Ridging with 12 ft. drain centres.
B = „ „ 18 ft. „ „
C = „ „ 24 ft. „ „
D = Cambering 12 ft. „ „
E = „ „ 18 ft. „ „
F = „ „ 24 ft. „ „
Close spacing = 4 ft. or 4 ft. 6 in. between rows.
Wide „ = 6 ft. between rows.

3. Frome—Masemure—Charlottenburgh—Logwood Gutter

	Cane				Sucrose				Sugar			
	Setts per acre				Setts per acre				Setts per acre			
Spring Plants	5000	7000	9000	Mean	5000	7000	9000	Mean	5000	7000	9000	Mean
B41227	52·7	100	101	52·7	13·2	99	103	13·3	7·0	98	103	7·0
B42231	79	88	91	86	105	101	107	104	83	89	97	89
B4362	93	84	83	89	110	112	110	110	102	94	92	95
Mean	47·8	100	101	—	13·8	99	102	—	6·6	99	102	—
S.E. % g.m. ..		7·9				4·8				10·1		
		Variety Spacing				Variety Spacing				Variety Spacing		
Sig. Diff.		7·2	—			4·6	—			9·6	—	
1st Ratoons												
B41227	34·9	103	110	36·3	14·8	99	102	14·9	5·2	102	112	5·4
B42231	82	87	100	86	97	94	99	96	79	82	99	85
B4362	88	96	100	91	112	111	110	110	98	107	110	100
Mean	31·3	106	115	—	15·2	99	101	—	4·8	105	110	—
S.E. % g.m. ..		10·4				1·5				11·3		
		Variety Spacing				Variety Spacing				Variety Spacing		
Sig. Diff.		9·6	11·1			0·7	0·7			10·7	12·1	
2nd Ratoons												
B41227	41·7	90	107	42·3	14·3	98	100	14·1	5·9	96	107	6·0
B42231	84	89	89	86	104	100	103	103	88	89	91	88
B4362	106	105	104	103	101	106	101	104	108	112	105	107
Mean	40·4	101	103	—	14·5	100	100	—	5·8	100	101	—
S.E. % g.m. ..		7·1				2·5				7·1		
		Variety Spacing				Variety Spacing				Variety Spacing		
		6·9	—			2·4	—			7·0	—	

4. Frome—Shrewsbury—Shrewsbury—Meylersfield Piece

	Cane				Sucrose				Sugar			
	Setts per acre				Setts per acre				Setts per acre			
Spring Plants	5000	7000	9000	Mean	5000	7000	9000	Mean	5000	7000	9000	Mean
B41227	64·3	97	107	65·1	7·7	106	127	8·4	5·3	97	126	5·7
B42231	75	90	90	84	130	139	133	122	92	115	110	98
B4362	73	79	79	76	121	106	114	103	82	78	84	76
Mean	53·2	107	111	—	8·9	100	107	—	4·9	106	117	—
S.E. % g.m. ..		8·7				11·6				10·9		
		Variety Spacing				Variety Spacing				Variety Spacing		
Sig. Diff.		7·6	9·3			10·7	—			9·9	11·7	
1st Ratoons												
B41227	53·8	87	98	51·2	11·6	89	101	11·2	6·3	78	100	5·8
B42231	77	85	84	86	110	114	106	114	84	96	89	97
B4362	70	80	80	81	129	124	125	131	90	99	100	104
Mean	44·2	102	106	—	13·0	105	102	—	5·7	100	105	—
S.E. % g.m. ..		9·2				6·3				12·7		
		Variety Spacing				Variety Spacing				Variety Spacing		
Sig. Diff.		9·5	—			4·5	—			—	—	
2nd Ratoons												
B41227	36·5	90	104	35·8	11·4	93	95	11·0	4·2	84	100	3·9
B42231	72	81	77	78	117	110	112	118	84	89	87	92
B4362	73	86	83	82	118	117	119	123	86	101	99	101
Mean	29·8	105	110	—	12·7	96	97	—	3·8	102	106	—
S.E. % g.m. ..		10·7				4·9				12·1		
		Variety Spacing				Variety Spacing				Variety Spacing		
		9·3	—			4·4	—			—	—	

5. Gray's Inn—Gibraltar—Section 11

Spring Plants	Cane A	Cane B	Cane C	Cane Mean	Sucrose A	Sucrose B	Sucrose C	Sucrose Mean	Sugar A	Sugar B	Sugar C	Sugar Mean
B3439	36·4	99	97	35·9	12·1	108	103	12·6	4·4	105	99	4·5
B37172	103	92	109	103	101	100	102	98	103	92	110	100
B4362	123	121	120	123	106	104	115	104	130	126	137	129
Mean	39·6	96	100	—	12·4	101	104	—	4·9	97	104	—
		Variety	Spacing			Variety	Spacing			Variety	Spacing	
S.E. % g.m.		17·1	23·2			11·0	8·2			19·3	25·5	
Sig. Diff.		15·6	—			—	—			17·8	—	

1st Ratoons				
B3439	30·5	105	111	32·1
B37172	107	103	104	99
B4362	129	134	126	123
Mean	34·1	102	102	—
		Variety	Spacing	
S.E. % g.m.		13·3	21·8	
Sig. Diff.		12·0	—	

A = 5 ft. rows 6 rows per bed. B = 4 ft. 3 in. rows 7 rows per bed. C = 3 ft. 4 in. rows 9 rows per bed.

6. Hampden—Crown Piece

Cane

Fall Plants	M_0	M_1	Uba	B37161	Mean
P_0	22·4	131	24·9	108	25·9
P_1	111	124	104	108	102
Mean	23·8	120	25·4	106	—
Uba	23·7	114	—	—	
B37161	100	127	—	—	

	Pl_0	Pl_1	Mean
Ca_0	24·4	94	23·7
Ca_1	105	125	118
—	25·0	107	—
	Variety	Marl	Phosphate
S.E. % g.m.	15·3	28·6	22·8
Sig. Diff.	—	—	—

M_0 = No marl applied.
M_1 = 40 tons marl per acre applied.
P_0 = No phosphate applied.
P_1 = 6 cwt. per acre 20% superphosphate at planting.
Pl_0 = Not ploughed.
Pl_1 = Ploughed.

7. Jamaica Sugar Estates—Golden Grove—Section 32

Cane

Spring Plants	1	2	3	a	b	Mean
B37172	36·7	96	106	36·9	100	37·0
B4362	97	99	96	97	96	97
a	36·3	99	103	—	—	36·5
b	99	99	102	—	—	99
Mean	36·2	99	103	—	—	—
	Bank widths			R.C.		Variety
S.E. % g.m.	18·5			9·6		8·6
Sig. Diff.	—			—		—

Sucrose

1	2	3	a	b	Mean
13·9	99	100	14·0	98	13·9
102	97	104	100	101	101
13·8	99	104	—	—	14·0
102	98	101	—	—	100
14·0	97	101	—	—	—
Bank widths			R.C.		Variety
8·1			—		4·2
—			—		—

Sugar

Spring Plants	1	2	3	a	b	Mean
B37172	5·1	95	107	5·1	99	5·1
B4362	99	97	100	98	98	98
a	5·0	98	107	—	—	5·1
b	102	98	103	—	—	99
Mean	5·1	97	104	—	—	—
	Bank widths			R.C.		Variety
S.E. % g.m.	18·7			9·1		6·9
Sig. Diff.	—			—		—

1 = 5½ ft. banks, moulded after planting.
2 = 6 ft. banks, formed before planting.
3 = 8 ft. grand banks, two cane rows.
a = No ratoon cultivation.
b = Ratoon cultivation.

8. Monymusk—Bog—Triangle 1

	Cane				Sucrose				Sugar			
	Setts per acre				Setts per acre				Setts per acre			
	5000	8000	Long tops	Mean	5000	8000	Long tops	Mean	5000	8000	Long tops	Mean
Spring Plants												
B41227	75·2	103	113	79·1	7·3	109	88	7·2	5·5	103	91	5·7
B42231	78	88	85	80	101	104	102	103	73	86	79	83
B4362	77	94	86	81	94	107	102	102	66	92	80	83
MY3	82	96	82	82	—	—	—	—	—	—	—	—
Mean	68·3	113	109	—	7·2	109	99	—	4·6	12·2	109	—
S.E. % g.m. ..		12·3				14·2				19·7		
		Variety Spacing				Variety Spacing				Variety Spacing		
Sig. Diff.		10·3	—			—	—			—	—	
1st Ratoons												
B41227	46·5	106	111	49·0	8·0	109	95	8·1	3·7	116	105	3·9
B42231	88	92	85	84	122	110	124	117	105	100	108	100
B4362	91	86	71	78	105	117	108	109	95	100	76	85
MY3	60	58	72	60	129	111	118	118	78	65	84	72
Mean	39·4	101	100	—	9·1	98	98	—	3·5	100	100	—
2nd Ratoons												
B41227	32·4	103	108	33·6	6·5	110	88	6·5	2·1	113	96	2·2
B42231	72	84	94	80	101	113	112	109	73	94	104	88
B4362	96	111	108	101	108	116	118	115	102	129	127	116
MY3	66	74	83	71	103	90	103	99	67	67	86	71
Mean	27·0	112	118	—	6·7	104	102	—	1·8	118	121	—
S.E. % g.m. ..		14·9				8·6				17·5		
		Variety Spacing				Variety Spacing				Variety Spacing		
Sig. Diff.		12·8	13·7			8·9	—			16·0	15·4	
3rd Ratoons												
B41227	32·6	107	107	34·4								
B42231	73	85	95	80								
B4362	96	111	107	100								
MY3	68	74	85	72								
Mean	27·4	112	117	—								
S.E. % g.m. ..		14·7										
		Variety Spacing										
Sig. Diff.		12·6	—									

9. Rose Hall—Hibbert—Section 1

	Cane				Sucrose				Sugar			
	3 ft.	4 ft.	5 ft.	Mean	3 ft.	4 ft.	5 ft.	Mean	3 ft.	4 ft.	5 ft.	Mean
Spring Plants												
B3439	35·4	102	76	32·9								
B37161	85	123	86	106								
B41227	129	125	101	128		No juice figures				No juice figures		
Mean	37·2	111	83	—								
		Variety Spacing										
S.E. % g.m. ..		12·6	16·3									
Sig. Diff.		12·0	13·7									
1st Ratoons												
B3439	23·2	129	87	24·4								
B37161	102	146	99	110								
B41227	127	175	112	131		No juice figures				No juice figures		
Mean	25·4	137	91	—								
		Variety Spacing										
S.E. % g.m. ..		17·5	12·9									
Sig. Diff.		17·1	14·1									

3 ft. = 9 rows per plot.
4 ft. = 7 ,, ,, ,,
5 ft. = 6 ,, ,, ,,

10. Serge Island—Serge—Pasture Piece

	Cane				Sucrose				Sugar			
	A	B	C	Mean	A	B	C	Mean	A	B	C	Mean
1st Ratoons												
B37172	37·3	105	94	37·2	15·1	101	99	15·1	5·6	107	94	5·6
B4362	93	103	89	95	111	109	112	111	104	113	100	106
Mean	36·0	108	95	—	16·0	99	100	—	5·7	107	95	—
		Variety Trashing				Variety Trashing				Variety Trashing		
S.E. % g.m. ..		12·6	13·2			5·9	7·7			12·6	16·1	
Sig. Diff.		—	—			4·4	—			—	—	

A = No trash relieved.
B = Trash relieved.
C = Trash relieved and banks reformed.

11. Vale Royal—Swanswick—Parris I

	Cane			
	B41227	B4362	Co331	Mean
Spring Plants				
4 ft. banks ..	32·9	85	112	32·5
3 ft. banks ..	108	93	119	108
Mean	34·4	86	111	—
		Variety Spacing		
S.E. % g.m. ..		8·2	7·2	
Sig. Diff.		5·2	4·4	

	Cane				Sucrose				Sugar			
	B41227	B4362	Co331	Mean	B41227	B4362	Co331	Mean	B41227	B4362	Co331	Mean
1st Ratoons												
4 ft. banks ..	27·9	87	111	27·8	13·4	120	96	14·2	3·7	105	107	3·9
3 ft. banks ..	100	92	114	103	102	118	96	100	102	110	109	103
Mean	27·9	90	113	—	13·6	118	95	—	3·8	106	107	—
		Variety Spacing				Variety Spacing				Variety Spacing		
S.E. % g.m. ..		13·5	9·5			8·0	5·6			17·0	13·5	
Sig. Diff.		6·2	—			3·8	—			—	—	
2nd Ratoons												
4 ft. banks ..	31·9	80	127	32·8								
3 ft. banks ..	116	96	142	115								
Mean	34·4	82	125	—								
		Variety Spacing				No juice figures				No juice figures		
S.E. % g.m. ..		16·9	21·2									
Sig. Diff.		7·8	8·4									

12. Vale Royal—Swanswick—Joe Piece 1

	Cane					Sucrose		Sugar	
	A	B	C	D	Mean				
Spring Plants ..									
Co331	33·1	108	100	97	33·4				
B41227	100	104	99	93	98				
B4362	83	87	84	101	88	No juice figures		No juice figures	
Mean	31·3	105	100	92	—				
		Variety Spacing							
S.E. % g.m. ..		7·3		9·1					
Sig. Diff.		6·0		—					
1st Ratoons									
Co331	34·7	102	92	100	34·2				
B41227	97	95	92	95	96				
B4362	74	73	69	65	72				
Mean	31·4	100	94	96	—	—		—	
		Variety Spacing							
S.E. % g.m. ..		13·2		20·3					
Sig. Diff.		10·1		—					

A = Standard practice 4 ft. rows with drains 20 ft. apart.
B = 4 ft. rows with 20 ft. apart drains.
C = 4 ft. rows on 20 ft. cambered beds.
D = 6 ft. rows Louisiana banks 2 rows placed 2 ft. apart on each bank.

(ii) Variety x Moulding Experiments

1. Frome—Masemure—Retrieve—Dago 1

	Cane			% Sucrose			Sugar		
	M_0	M_1	Mean	M_0	M_1	Mean	M_0	M_1	Mean
Spring Plants									
B41227	33·2	99	33·1	14·6	102	14·7	4·9	101	4·9
B42231	76	85	81	95	97	95	72	83	77
B4362	105	114	110	108	106	106	112	120	116
S.E. % g.m. ..		10·3			4·4			10·6	
Sig. Diff.		10·3			3·8			8·8	
1st Ratoons									
B41227	35·7	106	36·7	13·5	102	13·6	4·8	108	5·0
B42231	74	76	73	105	106	105	78	81	77
B4362	94	99	94	103	105	103	96	104	97
S.E. % g.m. ..		10·8			5·4			10·6	
Sig. Diff.		8·2			—			8·2	

2. Frome—Barham—Starapple—Morass

	Cane			% Sucrose			Sugar		
Spring Plants	M_0	M_1	Mean	M_0	M_1	Mean	M_0	M_1	Mean
B41227	18·3	96	17·9	13·9	98	13·8	2·6	94	2·5
B42231	100	95	99	104	101	104	104	99	104
B4362	108	111	112	110	110	112	116	123	123
S.E. % g.m. ..		10·3			4·3			9·7	
Sig. Diff.		9·2			3·7			8·5	
1st Ratoons									
B41227	25·9	101	26·0	14·8	104	15·1	3·9	104	3·9
B42231	147	140	143	107	107	105	156	149	149
B4362	131	137	133	99	101	98	129	137	130
S.E. % g.m. ..		8·7			4·6			9·3	
Sig. Diff.		6·9			3·9			7·7	

M_0 = Breaking banks in 1 operation.
M_1 = ,, ,, ,, 3 weedings—normal practice.

(iii) Variety x Booting Experiments

1. Frome—Masemure—Plantain Walk

	Cane			% Sucrose			Sugar		
Spring Plants	B_0	B_1	Mean	B_0	B_1	Mean	B_0	B_1	Mean
B41227	37·6	114	40·3	14·8	96	14·5	5·6	109	5·8
B42231	80	79	74	101	96	101	81	75	75
B4362	121	124	115	100	105	104	121	130	120
		Variety	Booting		Variety	Booting		Variety	Booting
S.E. % g.m. ..		27·0	11·3		4·7	4·2		25·3	11·1
Sig. Diff.		26·8	—		4·8	—		25·6	—
1st Ratoons									
B41227	46·8	91	44·7	13·9	100	13·9	6·5	92	6·2
B42231	69	69	73	102	102	102	70	71	74
B4362	100	98	104	104	105	104	104	103	108
		Variety	Booting		Variety	Booting		Variety	Booting
S.E. % g.m. ..		20·3	14·8		5·3	3·5		20·0	16·4
Sig. Diff.		19·3	—		—	—		19·4	—

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2. Frome—Mint—Mt. Eagle—Mt. Eagle Garden

	Cane			% Sucrose			Sugar		
Spring Plants	B_0	B_1	Mean	B_0	B_1	Mean	B_0	B_1	Mean
B41227	33·4	121	36·9	14·1	93	13·6	4·7	110	5·0
B42231	84	72	71	98	99	103	83	71	73
B4362	123	114	107	107	106	111	131	120	119
		Variety	Booting		Variety	Booting		Variety	Booting
S.E. % g.m. ..		13·8	12·8		8·1	5·5		7·8	12·6
Sig. Diff.		13·2	—		8·0	—		7·8	—
1st Ratoons									
B41227	45·9	111	48·5	13·1	98	13·0	6·0	109	6·3
B42231	87	87	82	108	107	108	94	93	90
B4362	107	99	98	106	106	107	113	105	104
		Variety	Booting		Variety	Booting		Variety	Booting
S.E. % g.m. ..		14·5	12·1		6·1	7·0		11·9	10·9
Sig. Diff.		13·9	—		6·0	—		—	—

PART 5

CULTIVATION EXPERIMENTS

1. Appleton—Raheen—Big Grass 5 (B34104)

	A	B	C	D	S.E. % g.m.	Sig. Dift.
Spring Plants						
Cane	100	114	101	71	3·1	6·0
Sucrose ..	100	104	103	104	4·1	8·1
Sugar	100	118	104	61	4·2	8·0
1st Ratoons						
Cane	100	104	103	92	8·7	—
% Pol	100	103	100	113	12·1	—
Pol	100	106	103	104	13·7	—
2nd Ratoons						
Cane	100	137	103	93	13·2	12·4
% Pol	100	101	89	101	7·1	—
Pol	100	137	93	93	9·0	8·3
3rd Ratoons						
Cane	100	119	89	112	24·8	—
% Pol	100	98	98	97	3·2	—
Pol	100	116	88	109	24·5	—

A = 24 ft. beds with 5 rows 5 ft. apart planted straight
B = 12 ft. ,, ,, 2 ,, 6 ft. ,, ,, staggered.
C = 24 ft. ,, ,, 4 ,, 6 ft. ,, ,, staggered.
D = 48 ft. ,, ,, 8 ,, 6 ft. ,, ,, straight.

2. Appleton—Raheen—Pimento Piece (B41227)

	Cane			Sucrose			Sugar		
	K	R	Mean	K	R	Mean	K	R	Mean
Spring Plants									
L_0	21·9	95	35·2	15·8	103	16·0	3·5	97	5·6
L_1	108	129	122	100	99	98	108	127	119
Mean	37·6	107	—	15·8	101	—	6·0	107	—
S.E. % g.m. ..		12·8			6·1			15·1	
		Lime	Knifing		Lime	Knifing		Lime	Knifing
Sig. Diff.		12·4	—		—	—		14·6	—

L_0 = No lime applied. L_1 = Lime applied at 20 tons marl/acre.
K = Cross knifing. R = Cross ripping.

3. Caymanas—L and K Piece (B4362)

	K_0	K_1	T_0	T_1	F_0	F_1	S.E. % g.m.	Sig. Diff.
1st Ratoons								
Cane	46·7	101	48·1	95	46·6	103	11·2	—
Sucrose ..	11·8	103	12·1	100	12·2	99	6·6	—
Sugar	5·5	104	5·8	95	5·7	99	8·2	—
2nd Ratoons								
Cane	40·3	95	39·4	99	—	—	5·8	—
Sucrose ..	12·3	98	12·3	98	—	—	4·1	—
Sugar	5·0	92	4·8	98	—	—	7·8	—

K_0 = No knifing. T_0 = No trash rowing. F_0 = No furrowing.
K_1 = Knifing. T_1 = Trash rowing. F_1 = Furrowing.

4. Frome—Belle Isle—Belle Isle—John Crow (B4362)

	A	B	C	D	E	S.E. % g.m.	Sig. Diff.
1st Ratoons							
Cane	60·1	98	92	100	99	5·1	—
Sucrose ..	15·1	99	92	93	97	6·8	—
Sugar	9·3	98	86	93	97	7·8	—

A = Control.
B = Trash turned and no forking.
C = Alternate rows forked and trash replaced.
D = Alternate rows forked and trash not replaced.
E = Every row forked.

5. Frome—Belle Isle—Paul Island—Top Morass (B4362)

	Cane				Sucrose				Sugar			
Spring Plants	H	R	K	Mean	H	R	K	Mean	H	R	K	Mean
O	43·7	102	107	45·1	9·8	102	108	10·1	4·3	103	114	4·6
XR	97	108	101	99	107	98	107	101	103	105	108	99
XK	103	110	106	103	99	95	102	96	102	105	108	99
Mean	43·7	107	105	—	10·0	96	104	—	4·4	103	108	—
	S.	P.	S.P.		S.	P.	S.P.		S.	P.	S.P.	
S.E. % g.m. ..	5·2	2·4	1·9		4·1	6·2	9·7		11·0	8·1	11·1	
Sig. Diff.	—	—	—		4·8	—	—		—	—	—	

H = Harrowing. O = No crossing. S = Straight cultivation. R = Ripping.
XR = Cross ripping. P = Cross cultivation. K = Knifing. XK = Cross knifing.

6. Frome—Blue Castle—Guthrie Pen 3 (B41227)

	A	B	C	D	E	S.E. % g.m.	Sig. Diff.
Spring Plants							
Cane	30·8	94	90	100	89	7·2	—
Sucrose ..	12·7	99	97	104	102	4·2	—
Sugar	3·9	94	88	104	91	10·1	—
1st Ratoons							
Cane	31·8	108	101	107	103	5·4	—
Sucrose ..	14·4	99	101	102	103	2·9	—
Sugar	4·6	107	102	109	106	3·5	—

A = Control.
B = Trash turned and no forking.
C = Alternate rows forked and trash replaced.
D = Alternate rows forked and trash not replaced.
E = Every row forked.

7. Frome—Masemure—Masemure—Belle Piece (B41227)

	Cane				Sucrose				Sugar			
Spring Plants	H	R	K	Mean	H	R	K	Mean	H	R	K	Mean
O	40·0	99	99	38·5	11·9	102	103	12·1	4·8	91	102	4·7
XR	94	93	100	99	103	92	98	96	96	85	97	95
XK	98	95	100	101	92	93	105	105	91	89	103	97
Mean	38·8	95	102	—	11·7	98	104	—	4·6	92	105	—
	S.	P.	S.P.		S.	P.	S.P.		S.	P.	S.P.	
S.E. % g.m. ..	10·7	4·8	7·3		7·7	12·9	10·8		14·0	11·8	13·9	
Sig. Diff.	—	—	—		—	—	—		—	—	—	

H = Harrowing. O = No crossing. S = Straight cultivation. R = Ripping.
XR = Cross ripping. P = Cross cultivation. K = Knifing. XK = Cross knifing.

8. Frome—Mint—Mint—Plum Tree (B4362)

	A	B	C	D	E	S.E. % g.m.	Sig. Diff.
Spring Plants							
Cane	34·4	98	97	85	92	10·9	—
Sucrose ..	12·4	99	98	93	98	6·5	—
Sugar	4·2	98	96	80	90	11·4	—

A = Control.
B = Trash turned and no forking.
C = Alternate rows forked and trash replaced.
D = Alternate rows forked and trash not replaced.
E = Every row forked.

9. Innswood—St. Helen's—9c (B34104)

	A	B	C	D	S.E. % g.m.	Sig. Diff.
Fall Plants						
Cane	25·5	101	105	102	5·6	—
1st Ratoons						
Cane	36·9	91	96	99	5·1	—
Sucrose ..	11·5	101	100	98	9·6	—
Sugar	4·2	92	95	96	10·4	—

A = Standard practise irrigating every row.
B = 10 ft. banks with 2 cane rows on each bank.
C = Irrigating every other furrow with drains 10 ft. apart.
D = ,, ,, ,, ,, ,, ,, 20 ft. ,,

10. Jamaica Sugar Estates—Golden Grove 12 (B4362)

CANE

	2 row beds	3 row beds	4 row beds	11 row beds	S.E. % g.m.	Sig. Diff.
1st Ratoons ..	108	110	109	38·5	11·8	6·3
2nd Ratoons ..	100	100	98	41·0	10·4	—

11. Richmond/Llandovery—Richmond—Cotton Tree 3 (B41227)

Plants	A	B	C	D	E	F	G	H	No extra S/A	Extra S/A	S.E. % g.m.	Sig. Diff.
Cane	36·8	94	97	104	117	112	104	99	38·4	98	13·5	—
Sucrose ..	12·4	107	95	94	98	92	94	100	12·2	100	8·3	—
Sugar	4·6	100	92	97	114	100	93	99	4·1	98	13·4	—
1st Ratoons									Close spacing	Wide spacing		
Cane	53·1	103	97	118	103	119	103	108	101	56·3	14·3	—

A = ½ chain cambered beds 4 rows.
B = ½ „ „ „ 6 „
C = Louisiana banks 1 row bank.
D = „ „ 2 „ „
E = Richmond method 3 ft. banks.
F = „ „ 5 ft. „
G = Flat and contour drains 3 ft. rows.
H = „ „ „ „ 5 ft. „
(Extra S/A was applied to ½ of each plot)

12. Serge Island—Hall Head—Gutter Piece (B4362)

CANE

Spring Plants	B	F	T	S	Mean		T	S
Knifed	30·1	107	31·7	96	31·0	B	35·3	99
Ripped	96	108	96	97	100	F	110	106
Mean	29·5	109	31·1	99	—		—	—
	Knifing vs. ripping		Bank vs. furrows		Normal vs. subsoil			
S.E. % g.m. ..	17·2		10·7		15·8			
Sig. Diff.	—		6·0		—			

B = Bank planted.
F = Furrow planted (later moulded).
T = Normal fertilizer application.
S = ½ fertilizer below surface, ½ above.

13. Serge Island—Serge—April (B37172)

Plants	Shallow furrow	Deep furrow	S.E. % g.m.	Sig. Diff.
Cane	41·96	104	11·4	—
1st Ratoons				
Cane	30·71	94	8·0	—
Sucrose ..	14·6	105	5·0	—
Sugar	4·5	99	8·3	—

14. United Estates—Whitewater 5 (B41227)

Spring Plants	5 ft. banks	10 ft. banks	S.E. % g.m.	Sig. Diff.	Straight planting	Staggered planting	S.E. % g.m.	Sig. Diff.
Cane	45·4	94	10·5	—	47·5	102	6·9	—
% Sucrose ..	11·7	99	4·8	—	12·9	100	3·7	—
Sugar	5·9	93	12·4	—	6·1	100	8·6	—

15. Vale Royal—Swanswick—Grey Piece 2 (B4362)

Spring Plants	A	B	C	S.E. % g.m.	Sig. Diff.
Cane	29·3	107	97	12·0	—

A = Normal.
B = Harrowing and ripping.
C = Harrowing, ripping and cross ripping.

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16. Worthy Park—Cocoa Walk 3 (B41227)

CANE

Spring Plants	N	S	N	D	B_0	B_1	L_0	L_1		N	S	N	D	Mean
N_0	37·5	103	37·3	104	37·8	86	34·3	122	B_0	36·4	108	36·2	106	38·1
N_1	98	109	102	107	100	89	104	123	B_1	90	92	87	92	102
L_0	33·7	107	33·5	109	34·7	86	—	—						
L_1	121	129	124	127	118	105	—	—						
Mean	34·6	105	34·5	106	37·9	87	35·0	120						

	Normal vs deep knifing				Normal vs subsoil fertilizer placement			
	A		B		A		B	
S.E. % g.m. ..	12·0		8·9		9·5		10·0	
	K	N	B	L	P	N	B	L
Sig. Diff.	—	—	4·5	4·0	4·8	—	5·0	4·5

Subsoiling: N = Normal.
D = Extra deep and half normal spacing between cuts.
Fertilizing: N = Normal method of application.
S = ½ S/A application, ½ M/K ,, , All S/P ,, } applied by tractor 6 in. below surface before planting.
½ S/A ,, , ½ M/K ,, } applied at same time as normal application and broadcast as normal.
B = 30 tons bagasse per acre.
L = 20 tons marl per acre.

PART 6

DISEASE EXPERIMENTS

(*a*) CHLOROTIC STREAK

Jamaica Sugar Estates—Golden Grove 27 (B4362)

	Diseased setts	Healthy setts	Diseased setts heat treated	Healthy setts heat treated	S.E. % g.m.	Sig. Diff.
Spring Plants						
Cane	31·8	158	136	158	8·0	19·1
% Sucrose ..	14·1	100	97	101	9·0	—
Sugar	4·5	157	132	159	16·4	38·8
1st Ratoons						
Cane	33·1	127	129	127	7·3	15·1
% Sucrose ..	9·0	100	100	99	1·9	—
Sugar	3·0	127	129	126	7·6	15·8

Worthy Park—Lime Kiln 1 (B4362)

	Diseased setts	Healthy setts	Diseased setts heat treated	Healthy setts heat treated	S.E. % g.m.	Sig. Diff.
Spring Plants						
Cane	38·2	118	126	126	3·9	7·9
% Sucrose ..	14·3	96	98	99	5·6	—
Sugar	5·6	110	122	122	7·1	11·7
1st Ratoons						
Cane	41·2	117	113	107	9·9	—
% Sucrose ..	13·7	94	101	100	4·2	—
Sugar	5·7	110	114	107	12·4	—

(*b*) RATOON STUNTING

Long Pond—Gibraltar 2 (Co421)

	Not inoculated	Inoculated (A)	Not heat treated	Heat treated (B)	Diseased setts	Healthy setts (C)	S.E. % g.m.	Sig. Diff. A	Sig. Diff. B	Sig. Diff. C
Spring Plants										
Cane	31·1	95	28·8	110	29·7	104	8·5	—	7·8	—
% Sucrose ..	9·0	102	9·8	87	9·2	99	13·2	—	7·4	—
Sugar	2·8	95	2·8	95	2·7	104	16·1	—	—	—
1st Ratoons										
Cane	31·0	93	28·0	113	26·1	129	16·9	—	—	17·0

APPENDIX III

PART 1

FACTORY DATA COMPARED BY CROPS

TABLE I

JUICE QUALITY. CROPS 1952–56

	1952	1953	1954	1955	1956
Cane, Pol %	12·41	12·18	11·94	12·83	12·78
Absolute Juice—°Brix	17·70	17·29	17·02	18·14	17·92
Purity	81·93	81·79	81·61	82·73	82·98

TABLE II

MILLING FIGURES. CROPS 1952–56

	1952	1953	1954	1955	1956
Tons cane per hour (TCH)	48·44	52·75	56·23	59·56	61·40
Tons fibre per hour (TFH)	6·99	7·55	7·89	8·64	8·66
Imbibition % Fibre	147·07	134·05	139·59	134·11	126·78
Reduced Pol Extraction	95·29	95·24	94·88	95·21	94·99
Absolute Juice lost % Fibre (pol basis)	32·94	33·35	35·86	33·52	35·09
Pol % Bagasse	2·40	2·38	2·33	2·47	2·55

TABLE III

LIME CONSUMPTION IN JAMAICAN FACTORIES. CROPS 1952–56

	Lbs. C_aO/Ton Cane					Lbs. C_aO/Ton Non-pol				
	1952	1953	1954	1955	1956	1952	1953	1954	1955	1956
†Monymusk	6·17*	4·22*	2·95*	2·99*	3·84*	223·8*	148·9*	104·2*	102·7*	134·3*
Richmond/Llandovery	1·16	1·22	1·49	1·78	1·78	46·4	46·9	60·6	75·0	75·7
Jamaica Sugar Estates	1·20	1·41	1·18	1·30	1·28	50·3	57·7	50·1	60·0	59·2
Frome	1·16	0·95	1·04	1·12	0·94	37·1	38·3	41·2	46·8	39·4
New Yarmouth	1·96	2·09	1·51	1·52	1·39	79·9	80·2	55·7	58·7	54·5
Caymanas	1·37	1·12	1·36	1·07	1·22	57·2	44·8	54·7	44·1	50·7
Innswood	1·39	1·17	0·98	0·98	0·98	55·5	44·1	38·2	44·5	44·7
Barnett	1·45	1·17	1·21	1·04	0·77	64·1	52·8	53·8	49·0	36·5
Worthy Park	0·88	1·10	1·46	0·93	1·16	47·6	59·0	79·3	49·5	58·8
Rose Hall	1·02	1·11	0·95	0·92	0·77	45·3	49·3	41·9	36·5	36·0
Green Park	1·21	1·08	—	—	—	55·3	42·6	—	—	—
Gray's Inn Central	1·07	1·17	1·62	1·51	1·21	42·6	46·3	62·1	59·2	47·1
Sevens	1·54	0·97	1·04	0·92	1·05	66·1	43·4	44·8	38·6	45·4
United Estates	1·12	1·40	1·28	1·29	1·05	48·7	62·6	56·2	58·8	47·1
Serge Island	1·42	1·35	1·28	1·35	1·66	57·5	51·4	54·7	60·9	83·7
Vale Royal	1·11	0·60	0·93	1·21	1·23	51·1	28·0	47·6	56·9	60·3
Appleton	0·76	0·95	0·97	0·78	1·25	35·7	47·3	43·2	40·5	58·8
Hampden	1·47	1·11	0·99	1·11	0·73	63·6	48·2	44·0	47·0	36·8
Bernard Lodge	1·51	1·53	1·55	1·72	1·60	64·6	63·6	69·7	71·9	69·9
Holland	—	1·21	1·25	1·53	1·01	—	49·1	49·1	60·8	38·3
Long Pond	1·01	1·91	1·34	1·47	1·95	55·5	86·2	65·5	45·1	96·0

*Includes Refinery Consumption. †New Factory in 1949.

TABLE IV

HEATER CAPACITIES. JAMAICAN FACTORIES. CROPS 1952–56

Factory	Cu. ft. M.Jc./Sq. ft. H.S./Hr.				
	1952	1953	1954	1955	1956
Monymusk	0·92	0·94	0·97	1·00	0·97
Richmond/Llandovery	0·95	1·16	1·35	1·31	1·32
Jamaica Sugar Estates	1·11	1·14	1·15	1·22	1·31
Frome	1·09	1·07	1·00	0·79	0·78
New Yarmouth	1·14	1·15	0·77	1·17	1·15
Caymanas	0·99	0·91	0·90	0·94	0·95
Innswood	1·02	1·03	1·11	1·20	1·16
Barnett	0·73	0·77	0·79	0·83	1·15
Worthy Park	0·86	1·01	1·07	1·03	1·10
Rose Hall	0·61	0·60	0·66	0·50	0·54
Green Park	0·36	0·36	0·27	—	—
Gray's Inn Central	1·03	1·04	1·03	1·03	1·01
Sevens	0·72	0·82	0·98	0·98	0·89
United Estates	1·15	1·24	0·74	0·82	0·88
Serge Island	0·85	1·03	1·09	1·08	0·95
Vale Royal	0·95	0·99	1·03	1·21	1·0
Appleton	0·56	0·66	0·77	0·83	0·8
Hampden	—	0·65	0·73	0·78	0·84
Bernard Lodge	—	0·94	0·95	0·91	0·97
Holland	0·64	0·72	0·61	0·65	0·45
Long Pond	0·51	0·55	0·72	0·68	0·62

TABLE V

ROTARY FILTER PERFORMANCE, CROPS 1952–56

Factory	Sq. ft. FA/TCH					Pol in Cake % Pol in Cane				
	1952	1953	1954	1955	1956	1952	1953	1954	1955	1956
Monymusk	4·10	3·96	3·82	3·69	3·77	0·43	0·45	0·49	0·43	0·49
Richmond/Llandovery	—	—	—	—	—	—	—	—	0·49	0·56
Jamaica Sugar Estates	—	—	—	—	—	—	—	—	0·48	0·56
Frome	3·43	3·36	2·63	3·81	3·79	0·20	0·24	0·26	0·22	0·21
New Yarmouth	4·99	4·91	4·94	4·78	4·74	0·46	0·67	0·38	0·45	0·43
Caymanas	5·97	5·59	5·47	5·35	5·23	0·32	0·40	0·54	0·33	0·46
Innswood	4·79	4·53	3·98	3·66	3·82	0·27	0·26	0·24	0·35	0·26
Barnett	—	—	5·82	5·34	4·92	—	—	0·27	0·35	0·36
Worthy Park	—	—	—	—	—	—	—	—	0·30	0·49
Rose Hall	—	—	—	—	5·75	—	—	—	0·53	0·39
Green Park	—	—	—	—	—	—	—	—	—	—
Gray's Inn Central	—	—	6·35	6·29	6·33	—	—	0·62	0·63	0·46
Sevens	—	—	3·45	3·26	3·52	—	—	0·27	0·34	0·26
United Estates	4·12	3·70	3·70	3·55	3·20	0·32	0·26	0·41	0·33	0·33
Serge Island	—	—	—	7·55	8·19	—	—	—	0·79	0·80
Vale Royal	—	—	7·70	6·37	6·04	—	—	0·62	0·62	0·43
Appleton	6·00	5·04	4·31	3·84	3·84	0·56	0·48	0·23	0·13	0·23
Hampden	—	—	—	6·06	5·51	—	—	—	0·40	0·76
Bernard Lodge	6·00	5·59	5·34	5·53	5·22	0·40	0·32	0·37	0·42	0·26
Holland	—	—	—	—	—	—	—	—	0·57	0·48
Long Pond	—	—	—	—	—	—	—	—	0·54	0·52

TABLE VI

FILTER STATION CONTROL FIGURES. CROPS 1952–56

	1952	1953	1954	1955	1956
Pol % Mud	2·33	2·40	2·02	1·84	2·06
Mud % Cane	2·28	2·29	2·29	2·43	2·51
Pol in Mud % Pol in Cane	0·43	0·45	0·39	0·35	0·40

TABLE VII

EVAPORATION RATES (AS LBS. EVAP./SQ. FT. H.S./HR.). CROPS 1952–56

Factory	°Brix Syrup					Lbs./Sq. ft. H.S./Hr.				
	1952	1953	1954	1955	1956	1952	1953	1954	1955	1956
Monymusk	58·85	58·67	54·67	54·92	57·87	9·80	8·67	8·67	7·17	6·99
Richmond/Llandovery ..	57·72	66·76	62·35	60·45	59·99	4·18	6·51	7·52	8·09	7·13
Jamaica Sugar Estates ..	59·04	57·81	57·56	56·59	57·41	7·27	6·54	6·62	5·67	6·33
Frome	51·33	48·99	57·97	59·89	57·63	10·81	9·83	7·98	7·94	7·67
New Yarmouth	62·96	63·60	66·11	63·42	62·99	6·50	7·57	7·68	7·62	7·40
Caymanas	58·54	57·77	54·75	62·12	64·12	6·58	4·77	4·63	5·02	4·59
Innswood	52·82	53·90	58·36	57·37	56·42	6·95	5·84	6·52	6·84	6·66
Barnett	62·15	58·51	57·53	59·13	59·40	7·61	7·08	7·35	7·53	8·26
Worthy Park	62·46	62·79	61·74	62·08	62·40	5·58	5·79	6·14	5·75	6·15
Rose Hall	65·39	60·96	59·99	63·37	61·53	7·73	6·66	8·02	8·01	8·45
Green Park	60·38	59·17	54·71	—	—	6·38	5·48	5·35	—	—
Gray's Inn Central ..	57·48	59·45	53·03	54·83	56·25	6·86	6·02	5·74	5·66	5·70
Sevens	61·33	61·64	64·32	64·78	65·47	6·35	6·38	6·75	6·63	6·75
United Estates	66·00	60·86	64·59	65·24	68·19	9·49	9·06	9·42	9·81	9·87
Serge Island	59·31	55·16	48·88	54·30	54·32	8·97	8·94	9·20	9·02	8·06
Vale Royal	59·08	58·36	60·64	61·28	59·28	9·20	8·34	8·89	7·22	7·63
Appleton	57·42	58·12	46·64	48·82	58·26	6·14	6·33	6·91	7·34	7·61
Hampden	61·54	57·70	59·40	59·96	60·22	5·25	6·04	7·18	7·27	7·75
Bernard Lodge	61·45	60·83	61·43	61·91	65·46	5·63	5·36	5·40	5·08	5·57
Holland	61·24	52·35	57·72	60·35	57·35	5·21	4·93	4·84	5·02	5·05
Long Pond	51·90	51·19	52·42	58·95	56·20	7·62	6·89	7·90	8·90	8·48

TABLE VIII

POLARIZATIONS, MOISTURES, SAFETY FACTORS AND PERMISSIBLE MOISTURES—EXPORT SUGAR. CROPS 1952–56

Factory	°Polarization					% Moisture				
	1952	1953	1954	1955	1956	1952	1953	1954	1955	1956
Monymusk	95·75	96·01	96·59	96·49	97·97	0·94	1·10	1·14	0·96	0·58
Richmond/Llandovery	—	—	—	—	96·70	—	—	—	—	0·87
Jamaica Sugar Estates	—	—	—	—	97·58	—	—	—	—	0·94
Frome	96·10	95·96	96·23	96·57	96·87	1·08	1·07	1·07	0·94	0·82
New Yarmouth	97·44	97·42	97·32	97·68	97·74	0·59	0·61	—	0·58	0·55
Caymanas	97·22	97·50	97·57	97·21	97·38	—	—	—	—	—
Innswood	96·95	97·01	97·01	97·28	97·09	0·96	0·96	0·99	0·90	0·86
Barnett	97·61	96·62	97·48	97·09	97·64	0·97	0·99	1·00	0·99	0·96
Worthy Park	97·51	97·09	96·92	97·21	97·11	1·00	1·03	1·05	1·03	0·99
Rose Hall	—	96·72	97·28	97·09	97·25	—	0·86	0·83	0·85	0·80
Green Park	—	—	—	—	—	0·81	—	—	—	—
Gray's Inn Central	96·52	96·43	96·57	97·15	97·21	0·89	1·05	1·00	0·81	0·87
Sevens	96·61	96·45	96·54	97·10	97·33	—	—	0·73	0·68	0·65
United Estates	97·05	97·10	97·02	97·05	97·70	0·90	0·86	0·85	0·89	0·84
Serge Island	96·38	96·67	96·88	96·86	97·08	0·94	0·89	0·83	0·92	0·96
Vale Royal	—	—	—	—	97·12	0·68	0·72	—	—	0·64
Appleton	97·85	97·56	97·18	97·42	97·08	0·93	0·94	0·86	0·87	0·84
Hampden	97·17	97·42	97·96	98·10	98·18	0·87	0·88	0·87	0·87	0·88
Bernard Lodge	97·25	97·17	—	97·45	97·47	—	—	—	0·90	—
Holland	96·76	96·67	96·94	96·51	96·91	—	—	0·83	0·91	0·84
Long Pond	—	—	97·57	—	97·58	0·73	—	—	—	0·64

Factory	Safety Factor					Permissible % Moisture				
	1952	1953	1954	1955	1956	1952	1953	1954	1955	1956
Monymusk	0·221	0·276	0·334	0·274	0·286	1·06	1·00	0·85	0·88	0·51
Richmond/Llandovery	—	—	—	—	0·264	—	—	—	—	0·83
Jamaica Sugar Estates	—	—	—	—	0·390	—	—	—	—	0·61
Frome	0·277	0·265	0·284	0·274	0·262	0·98	1·01	0·94	0·86	0·78
New Yarmouth	0·230	0·170	—	0·250	0·243	0·64	0·65	0·67	0·58	0·57
Caymanas	—	—	—	—	—	0·70	0·63	0·61	0·70	0·66
Innswood	0·315	0·321	0·331	0·331	0·296	0·76	0·75	0·75	0·68	0·73
Barnett	0·406	0·293	0·397	0·340	0·407	0·60	0·85	0·63	0·73	0·59
Worthy Park	0·402	0·354	0·341	0·369	0·343	0·62	0·73	0·77	0·70	0·72
Rose Hall	—	0·262	0·305	0·292	0·291	—	0·82	0·68	0·73	0·69
Green Park	—	—	—	—	—	—	—	—	—	—
Gray's Inn Central	0·256	0·294	0·292	0·284	0·312	0·87	0·89	0·86	0·71	0·70
Sevens	—	—	0·211	0·234	0·243	0·85	0·89	0·87	0·73	0·67
United Estates	0·305	0·297	0·285	0·302	0·365	0·74	0·73	0·75	0·74	0·58
Serge Island	0·260	0·267	0·266	0·293	0·329	0·91	0·83	0·78	0·79	0·73
Vale Royal	—	—	—	—	0·222	—	—	—	—	0·72
Appleton	0·432	0·385	0·305	0·337	0·288	0·54	0·61	0·71	0·65	0·73
Hampden	0·307	0·341	0·426	0·456	0·484	0·71	0·65	0·51	0·48	0·46
Bernard Lodge	—	—	—	0·353	—	0·69	0·71	—	0·64	0·63
Holland	—	—	0·271	0·261	0·272	0·81	0·83	0·77	0·87	0·77
Long Pond	—	—	—	—	0·264	—	—	0·61	—	0·61

TABLE IX

PER CENT. GROSS GRINDING TIME. CROPS 1952–56

	1952	1953	1954	1955	1956
Non-Factory Stoppages	15·05	16·47	15·11	14·81	15·41
Factory Stoppages	7·80	7·85	7·72	7·20	7·66
Time Grinding	77·15	75·68	77·17	77·99	76·93

TABLE X

POL BALANCE (% POL IN CANE). CROPS 1952–56

	1952	1953	1954	1955	1956
Pol in Sugars	84·44	84·11	84·33	84·48	84·82
Pol in Bagasse	5·53	5·57	5·53	5·69	5·75
Pol in Molasses	7·89	8·33	8·23	7·97	7·64
Pol in Filter Cake	0·42	0·45	0·39	0·35	0·40
Pol in Undetermined	1·72	1·54	1·52	1·51	1·39

TABLE XI

COMPARATIVE CONTROL FIGURES. CROPS 1952–56

	1952	1953	1954	1955	1956
Pol % Cane	12·41	12·18	11·94	12·83	12·78
Mixed Juice—Purity	82·56	82·21	82·02	83·17	83·38
Tons Cane/Ton 96° Sugar	9·16	9·37	9·53	8·86	8·86
Boiling House Efficiency	97·62	97·51	97·85	97·46	97·78
Pol in Sugars % Pol in Cane	84·42	84·11	84·33	84·48	87·00
Pol in Molasses % Pol in Cane	7·63	8·20	8·23	7·97	7·64

TABLE XII

MOLASSES FACTORS. CROPS 1952–56

Factory	1952	1953	1954	1955	1956
Monymusk	45·06	46·72	44·62	45·25	44·11
Richmond/Llandovery	35·02	37·05	38·26	40·57	40·49
Jamaica Sugar Estates	40·40	42·33	38·91	38·89	39·30
Frome	33·57	35·32	33·98	37·76	38·64
New Yarmouth	39·26	38·34	38·10	38·78	37·61
Caymanas	36·98	39·72	39·65	40·15	38·92
Innswood	42·89	45·24	47·32	57·14	49·76
Barnett	39·73	42·73	42·62	44·81	37·74
Worthy Park	35·92	31·90	41·69	45·20	37·90
Rose Hall	44·57	48·13	52·45	44·45	38·71
Green Park	—	—	—	—	—
Gray's Inn Central	39·49	37·31	39·03	42·62	40·42
Sevens	39·50	41·37	39·86	36·78	40·68
United Estates	38·14	38·35	38·31	36·77	37·88
Serge Island	40·23	37·62	35·62	38·99	45·03
Vale Royal	34·78	35·25	39·72	38·06	36·69
Appleton	46·41	33·63	29·67	30·12	30·03
Hampden	—	38·12	42·87	46·91	48·53
Bernard Lodge	41·22	43·66	45·44	43·24	38·16
Holland	50·21	46·71	37·02	40·11	35·70
Long Pond	36·92	37·98	38·77	27·06	36·80

TABLE XIII

QUALITY OF CANE SUPPLIED TO JAMAICAN FACTORIES, EXPRESSED AS POSSIBLE TONS CANE/TON 96° SUGAR

(Calculated on a basis of assumed Mill Extraction of 96·50, a B.H.E. (Winter Carp) of 100 and Pol % Cane and Purity of Mixed Juice as reported.)

(Calculated on Copp's Tables—Spencer Meade, page 762.)

Factory	1952	1953	1954	1955	1956	5-Year averages
Monymusk	8·43	9·12	8·98	9·08	8·85	8·89
Richmond/Llandovery	9·25	8·36	8·98	8·62	8·49	8·74
Jamaica Sugar Estates	9·22	9·77	9·61	8·34	8·84	9·16
Frome	8·53	9·03	9·32	8·04	8·07	8·60
New Yarmouth	8·66	8·62	8·79	8·26	8·22	8·51
Caymanas	8·73	8·64	8·83	8·30	8·48	8·60
Innswood	9·03	8·80	9·09	8·01	8·48	8·68
Barnett	7·80	8·66	9·04	8·05	7·86	8·28
Worthy Park	7·27	7·27	7·42	6·89	7·08	7·19
Rose Hall	7·43	7·56	8·35	8·10	7·82	7·85
Green Park	7·95	8·73	9·77	—	—	—
Gray's Inn Central	10·76	9·84	10·18	9·29	9·67	9·95
Sevens	8·85	8·54	8·66	8·36	8·55	8·59
United Estates	7·93	8·44	8·76	7·88	7·81	8·16
Serge Island	7·79	8·20	8·51	7·78	8·11	8·08
Vale Royal	8·41	8·72	8·94	8·53	8·44	8·61
Appleton	7·52	7·98	8·90	7·85	7·79	8·01
Hampden	8·24	8·77	9·26	8·19	7·64	8·42
Bernard Lodge	8·83	8·69	8·59	8·12	8·23	8·49
Holland	8·90	8·85	9·97	8·11	8·84	8·93
Long Pond	8·09	9·07	9·49	8·64	8·77	8·81
Island Averages	8·65	8·83	9·02	8·33	8·35	8·64

FACTORY DATA—1956 CROP

TABLE I

Factory Equipment Data

Factories	Width Carrier	Knives			Crusher and Mills	Total Rolls	Remarks
		Setts	Blades/Setts	H.P.			
Monymusk	78″	2	38/38	200/200	3 RC 35½″ × 78″, 15 RM 35″ × 78″	18	Equipment and storage facilities for bulk sugar during 1956 crop.
Richmond/Llandovery ..	41″	1	22	40	6 RM 22″ × 42″, 12 RM 24″ × 42″	18	Same as 1955 crop.
Jamaica Sugar Estates..	60″	2	30/30	80/150	2–2 RC 30″ × 60″, 12 RM 30″ × 60″	16	For 1956 crop: 1 set heavy duty cane knives 580 r.p.m. 30 blades. 1 bagasse baling press, mechanical lubrication of all mills. 1 pH meter for clarification, 1 Panohmer. C sugar mingler, Smith's Rota Pump, vertical air pump, capacity 1000 cu. ft./min. For 1957 crop: alteration to mill gearing to drive 3rd mill from No. 2 engine. De-superheater and makeup valve to 10 lb. exhaust line. Syrup pump, automatic pH control.
Frome	78″	2	38/38	300/200	3 RC 35½″ × 78″, 12 RM 35″ × 78″	15	For 1957 crop: installation of Surplus Bagasse Incinerator.
New Yarmouth	52″	2	26/36	150/140	3 RC 28½″ × 54″, 12 RM 26″ × 54″	15	For 1956 crop: elimination of railway. All cane delivered by road over 2 Avery Electric Scales in yard to existing tower crane and 2 new Gantry Cranes. Result: better control of cane supply; more expeditious turn-round of vehicles; more economical operation. For 1957 crop: one 4000 sq. ft. boiler in Ward Furnace. One 2 ton Maxwell-Bologne Juice Scale (replaces 1½ ton). One 1500 Kw. Condensing turbine (for irrigation power). Conversion to Bulk Store and handling of sugar.
Caymanas	48″	1	32	110	3 RC 24″ × 48″, 12 RM 24″ × 48″	15	For 1956 crop: a new 1600 sq. ft. H.S. vessel was installed to give a total of 14,600 sq. ft. arranged in quadruple effect. For 1957 crop: No. 4 Boiler (Ward Furnace boiler installed 1955) is being fitted with oil fuel firing equipment for stand by and out of crop distillery steam supply. The Corliss valve engine driving the mill gear train will be fitted with new cylinder, tail end cover, piston and piston rod.
Innswood	42″	1	24	75	3 RC 24″ × 42″, 12 RM 24″ × 42″	15	For 1956 crop: fourth tray on Dorr greatly improved Juice Clarification. For 1957 crop it is proposed installing a set of knives before the existing set. Adding an extra belt of 200 cu. ft. to No. 1 Vacuum Pan. Making changes for bulk shipment of sugar. Automatic bagging and sack closing equipment for Local Quota sugar. Adding 4 new 600 cu. ft. crystallizers with Blanchard cooling element for low grades.
Barnett	40″	2	24/28	75/120	3 RC 23″ × 36″, 12 RM 22″ × 36″	15	For 1957 crop: propose using 3–250 cu. ft. Natural Cooling and installing 1350 cu. ft. Water Cooling Crystallizers.
Worthy Park	42″	1	24	45	3 RC 22½″ × 42″, 3 RM 22½″ × 42″, 9 RM 24″ × 42″	15	For 1956 crop: 1–8 ft. Fletcher Centre flow Vacuum Pan. 1 B. & W. Boiler increased from 4000 sq. ft. to 5000 sq. ft., and 1 Thompson Eisner Furnace. Grinding rate increased from 28·97 to 31·8 tons cane per hour during 1957 crop.
Rose Hall	38″	1	26	75	15 RM 24″ × 42″	15	For 1956 crop an Eimco Filter was installed. Operation: very satisfactory. Benefit: lower pol and 2 men less per shift used. For 1957 crop: 1–7½ ton Steam Driven Crane; 1 Centrifugal Pump for Raw Juice and 1 Cent. Pump for Quad Supply.
Gray's Inn Central ..	60″	1	10	15	2 RC 26″ × 60″, 12 RM 30″ × 60″	14	For 1957 crop: one Water Tube Boiler to replace two Fire Tube Boilers.
Sevens	54″	1	26	200	12 RM 32″ × 60″	12	For 1956 crop: one 7½ ton Henderson Tower Crane. Two 6000 sq. ft. H.S. Babcock & Wilcox Boilers, with new chimney of 11′ 6″ diameter and 150′ high, to take care of boilers. For 1957: Cross Carrier for Road Crane; Bulk Sugar Bin and Conveyor.
Bybrook	39″	1	24	75	6 RM 24″ × 42″, 3 RM 25½″ × 42″, 3 RM 26½″ × 42″	12	For 1956 crop: Nos. 1 and 2 Mills were replaced by stronger units. New Boiler Feed Pump. Nos. 1 and 2 Furnaces were modified. Increased H.S. No. 2 Vessel Evaporator for bleeding to 1st stage heater with modifications to save-alls. Increased H.S. L.G. Pugmill and increased basket speeds. Modified Massecuite striking gutters to enclose pipes. Increased size of vapour pipe from 4th Vessel to Condenser. Installed thermometers and lubricating system for L.G. Massecuites.
Serge Island	48″	1	22	220	3 RC 26″ × 48″, 9 RM 24″ × 48″	12	For 1956 crop the Bach Clarifier performed satisfactorily. For 1957 crop: one 5000 sq. ft. John Thompson Boiler with Eisner Furnace.
Vale Royal	42″	1	30	75	12 RM 24″ × 42″	12	For 1956 crop increased boiler capacity by 1760 sq. ft. H.S. Added additional tray to Bach Clarifier. Increased juice straining area by 6 sq. ft., and installed extra set of cane knives. For 1957 crop: Juice Heaters will be increased to 1400 sq. ft. and Continuous 1st Subsiders to 2800 cu. ft.
Appleton..	42″	2	13/26	75/90	3 RC 26″ × 42″, 9 RM 25″ × 42″	12	For 1956 crop: 1800 gallons Juice Settling Tanks and increase in capacity Bach Subsider (1 Section), i.e. from 5 to 6. For 1957 crop: 1st and 2nd set of cane knives will be increased from 13 and 26 to 26 and 52 respectively; H.P. will also be increased from 75 and 90 to 90 and 130.
Hampden	44″	2	20/16	100/50	12 RM 24″ × 48″	12	For 1956 crop: Tint level regulators on Quad and new boiler and new water pump. For 1957 crop: new Hepworth 40″ × 24″ centrifugals, water driven, automatic P.H. controller for liming. 3 new 475 sq. ft. high grade Juice Heaters. ¾ ton Maxwell Bologne scale for molasses and Blanchard cooling coils for "C" sugars.
Bernard Lodge	87″	1	42	180	2 RC 34″ × 87″, 6 RM 37″ × 84″, 3 RM 38″ × 84″	11	For 1956 crop: one 10′ "Honiron" Low Head Vacuum Pan 850 cu. ft. 1630 sq. ft. H.S. to replace one 10′ Pan—600 cu. ft. 1000 sq. ft. H.S.
Holland	36″	1	18	40	2 RC 20″ × 36″, 9 RM 22″ × 36″	11	For 1957 crop: superheater and additional tubes for boiler.
Long Pond	43″	1	33	60	9 RM 24¾″ × 48″	9	For 1956 crop: induced draught for furnaces. Edward's hydraulics on all mills. Evaporators to be cleaned by chemical methods. For 1957 crop: Boilers. Water Tube increased from 9250 sq. ft. H.S. to 10,350 sq. ft. H.S.

TABLE II

FACTORY STATIONS CAPACITIES, 1956

		Mony-musk	Rich-mond/ Llan-dovery	Jamaica Sugar Estates	Frome	New Yar-mouth	Cay-manas	Inns-wood	Bar-nett	Worthy Park	Rose Hall	Gray's Inn Central	Sevens	By-brook	Serge Island	Vale Royal	Apple-ton	Hamp-den	Ber-nard Lodge	Holland	Long Pond	Totals and Averages
Per Ton Cane/Hour:																						
Boilers																						
As Water Tube	sq. ft. H.S.	239	267	388	213	254	391	337	279	283	307	254	359	268	331	251	435	325	190	232	335	281
Superheater	sq. ft. H.S.	38	—	60	34	35	—	—	26	—	—	14	—	—	—	—	38	—	3	—	—	33
Juice Heaters	sq. ft. H.S.	30	23	23	31	25	34	25	26	28	56	28	30	37	30	30	37	33	31	68	43	31
Filters																						
Presses	sq. ft. F.A.	—	42	46	—	—	—	—	19	30	53	—	—	—	—	—	—	—	—	72	54	42
Rotary	sq. ft. F.A.	3·77	—	—	3·79	4·74	5·25	3·82	4·92	—	5·75	6·33	3·21	3·20	8·19	6·04	3·84	5·51	5·22	—	—	4·55
First Subsiders																						
Continuous	cu. ft. ..	45	77	68	77	100	98	61	98	63	76	71	52	61	131	75	76	73	87	—	90	74
Intermittent	cu. ft. ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	38	—	118	—	57
Second Subsiders																						
Intermittent	cu. ft. ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15	—	25	—	17
Evaporators																						
Cl Juice Heaters	sq. ft. H.S.	10	—	—	9	10	—	—	11	—	—	—	—	5	—	13	—	—	—	—	22	10
As Quad	sq. ft. H.S.	196	209	235	196	190	355	211	174	242	173	241	219	159	164	200	198	172	274	289	168	211
Per Ton Commercial Sugar/Hour:																						
Evaporators																						
As Quad	sq. ft. H.S.	1,869	1,868	2,221	1,662	1,712	3,195	1,990	1,460	1,860	1,452	2,470	2,030	1,335	1,485	1,817	1,747	1,493	2,468	2,762	1,620	1,897
Vacuum Pans																						
As Calandria	sq. ft. H.S.	502	—	546	345	456	473	408	449	402	—	665	330	336	501	437	499	401	620	—	505	454
	cu. ft. ..	359	273	343	239	320	288	345	369	321	282	426	246	207	290	279	352	242	400	345	366	309
Syrup Tanks	cu. ft. ..	187	144	207	119	205	246	119	161	129	111	279	122	138	295	164	135	161	376	271	181	196
A and B Molasses Tanks	cu. ft. ..	496	345	413	284	288	246	636	335	459	332	678	278	280	535	322	405	249	564	718	401	396
Crystallizers																						
Natural Cooling	cu. ft. ..	—	—	475	—	240	—	551	1,267	157	376	426	—	143	498	—	538	319	705	581	—	465
Air Cooled (Pitcairn)	cu. ft. ..	—	566	—	—	—	492	—	—	—	439	—	—	—	—	1,164	—	—	—	—	1,045	726
Water Cooled	cu. ft. ..	477	414	791	261	437	—	626	—	—	439	1,008	619	430	413	—	586	323	—	615	—	485
	sq. ft. C.A.	176	180	120	97	57	—	—	—	—	195	296	—	215	124	—	—	48	—	—	—	138
Total Installed:																						
Pug Mill L.G. Sugars	cu. ft. ..	574	75	149	—	550	—	26	80	—	—	84	67	58	90	—	—	—	—	—	320	2,073
Water Heated	sq. ft. ..	—	—	—	—	—	—	—	—	—	—	—	14	—	—	—	—	—	—	—	—	14
Vapour Heated	sq. ft. ..	—	—	—	—	—	—	—	—	55	—	—	—	118	—	—	—	—	—	—	—	173
Centrifugals																						
High Grade Sugars	No. Off.	8	6	6	9–4	4	8	6	6	5	4	6	6	6	6	7	5	3	8	3	3	119
Size: Height	ins. ..	20	18	20	20–20	24	18	18	18	18	18	18	18	18	18	14	24	24	24	18	24	19
Diameter	ins. ..	42	30	42	42–42	40	36	30	30	36	36	36	36	30	36	30	40	42	40	30	42	36
Operating Speed	r.p.m. ..	1,200	1,200	1,000	1,000–1,500	50–850–1,750	1,000	1,400	1,100	1,200	1,100	1,220	1,200	1,300	1,000	1,200	1,000	1,200	1,100	1,200	1,200	1,137
Gravity Factor		860	615	595	595–1,340	1,675	510	835	515	735	620	760	735	720	510	615	565	860	685	615	860	660
Low Grade Sugars	No. Off. ..	12	6	6–2	13	4	4	5	6	2–1	5	7	6	4	3	5	3	6	4	2	2	108
Size: Height	ins. ..	20	18	20–24	20	24	18	18	18	18–18	18	18	18	18	20	18	18	18	24	18	24	19
Diameter	ins. ..	42	30	42–42	42	40	42	30	30	30–36	30	36	36	36	42	30	30	30	42	30	42	36
Operating Speed	r.p.m. ..	1,200	1,200	1,000–750–1,500	1,000	1,650	1,300	1,400	1,100	1,200–1,200	1,200	1,140	1,200	1,200	1,000	1,200	1,200	1,200	1,400	1,200	1,200	1,185
Gravity Factor		860	615	595–755	595	1,550	1,005	835	515	615–735	615	665	735	735	595	615	615	615	1,170	615	860	720
Affination	No. Off. ..	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5
Size: Height	ins. ..	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20
Diameter	ins. ..	42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	42
Operating Speed	r.p.m. ..	1,200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,200
Gravity Factor		860	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	860
Refinery	No. Off. ..	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
Size: Height	ins. ..	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20
Diameter	ins. ..	42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	42
Operating Speed	r.p.m. ..	1,200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,200
Gravity Factor		860	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	860

TABLE III

Factory Quantities

	Mony-musk	Rich-mond/ Llan-dovery	Jamaica Sugar Estates	Frome	New Yar-mouth	Cay-manas	Inns-wood	Bar-nett	Worthy Park	Rose Hall	Gray's Inn Central	Sevens	By-brook	Serge Island	Vale Royal	Apple-ton	Hamp-den	Ber-nard Lodge	Holland	Long Pond	Totals and Averages
Tons Cane:																					
Estate Ground	519,418	48,530	101,602	311,099	134,973	100,155	72,098	26,721	46,094	37,305	63,217	67,846	63,896	42,764	69,649	65,043	53,328	110,071	28,282	48,476	2,010,567
Purchased Ground ..	146,286	6,117	59,506	279,390	73,229	10,000	55,509	41,314	35,456	27,734	72,765	96,688	52,540	44,360	31,973	31,992	72,909	38,005	6,601	27,036	1,209,410
Total Ground	665,704	54,647	161,108	590,489	208,202	110,155	127,607	68,035	81,550	65,039	135,982	164,534	116,436	87,124	101,622	97,035	126,237	148,076	34,883	75,512	3,219,977
Total for Sugar Manuf. ..	665,424	54,647	161,108	590,222	208,202	110,155	127,607	68,035	81,550	65,039	135,982	164,534	116,436	87,124	101,395	94,765	121,899	148,067	34,883	68,845	3,205,919
Bagasse																					
Estimated Surplus Tons	—	—	—	2,496	1,000	—	—	100	—	—	14,000	—	—	200	—	—	—	—	—	—	17,796
Fuel																					
Wood used: Factory »	—	551	—	—	—	—	270	200	—	—	—	800	300	215	500	801	—	—	1,570	1,000	6,207
Distillery »	—	680	—	—	—	—	77	570	—	1,275	—	—	—	—	250	—	—	1,750	350	850	5,802
Locomotives»	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lime Kiln »	—	—	—	901	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	901
Factory: Wood/Ton 96° Sugar »	—	0·09	—	—	—	—	0·02	0·02	—	—	—	0·04	0·02	0·02	0·04	0·07	—	—	0·43	0·14	—
Filter Cake »	23,688	865	2,435	13,459	4,650	3,067	1,813	1,321	1,376	1,112	3,875	4,752	3,469	2,221	1,906	1,677	4,053	3,615	482	745	80,581
Gals. Molasses																					
Equivalent 88° Brix ..	4,174,230	272,737	743,720	3,100,776	1,037,045	534,236	632,139	297,979	292,422	263,888	774,619	834,842	548,492	390,526	433,578	499,629	639,741	605,937	168,138	296,590	16,541,264
Sugar Made																					
"A" Grade Tons	—	—	—	—	—	—	—	—	—	—	—	—	301·00	—	—	—	—	—	—	—	301·00
"C" Grade »	—	—	—	—	—	3368·90	—	700·00	2000·00	—	400·00	—	3602·00	—	—	—	—	—	—	—	10070·90
"D" Grade .. »	—	1800·00	—	3000·00	*1585·80	2104·90	1100·00	1250·00	1476·20	—	2750·00	492·00	1117·50	552·60	300·00	3290·10	399·00	*1500·00	1360·00	250·00	24328·10
Refined »	10300·00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10300·00
Total Local Consumptn. »	10300·00	1800·00	—	3000·00	1585·80	5473·80	1100·00	1950·00	3476·20	—	3150·00	492·00	5020·50	552·60	300·00	3290·10	399·00	1500·00	1360·00	250·00	45000·00
Substitution .. »	—	—	2149·00	5804·00	1329·20	—	606·00	—	—	970·00	—	1750·00	—	660·40	1110·00	—	1428·00	576·00	—	653·00	17035·60
Export .. .. »	59661·10	4320·00	14867·10	60906·30	20165·30	6723·70	11802·10	6138·90	7135·70	6708·10	10110·60	15508·00	8849·80	8393·20	9756·30	7698·00	12641·50	14359·30	2279·40	6248·70	294273·40
Official Crop Production »	69961·40	6120·00	17016·10	69710·30	23080·30	12197·50	13508·10	8088·90	10611·90	7678·10	13260·60	17750·00	13870·30	9606·20	11166·30	10988·10	14468·50	16435·30	3639·40	7151·70	356309·00
Lime Burnt .. Lbs.	2,557,722	97,020	206,998	556,320	289,340	134,072	125,596	52,549	94,365	50,386	163,900	172,166	121,853	144,280	124,750	118,474	89,131	231,453	35,350	134,400	5,500,125
Phosphate for Clari-fication .. .. »										—	—	—	—	—	—	—	—	—	—	—	—
Superphosphate »	—	—	3,000	—	—	—	—	—	13,000	—	—	—	—	—	—	—	—	—	—	—	16,000
Tri-Sodium Phosphate Lbs.	—	—	—	24,416	—	—	2,195	—	—	—	—	—	—	—	—	—	—	—	—	—	26,611

"D" Sugar

	Tons Washed	Tons Raw
*New Yarmouth	1141·2	444·6
*Bernard Lodge	150·0	1350·0

TABLE IV

Factory Analytical Data

	Mony-musk	Rich-mond/ Llan-dovery	Jamaica Sugar Estates	Frome	New Yar-mouth	Cay-manas	Inns-wood	Bar-nett	Worthy Park	Rose Hall	Gray's Inn Central	Sevens	By-brook	Serge Island	Vale Royal	Apple-ton	Hamp-den	Ber-nard Lodge	Holland	Long Pond	Totals and Averages
Cane																					
Pol %	12·31	12·56	12·04	13·18	13·04	12·54	12·54	13·40	14·70	13·48	11·24	12·49	13·51	12·96	12·52	13·51	13·71	12·92	12·25	12·09	12·78
Fibre %	12·44	14·35	15·53	13·44	15·01	13·35	14·96	13·58	13·07	14·73	17·59	15·36	14·22	15·27	14·51	12·80	15·33	14·99	14·02	14·63	14·10
Bagasse																					
Pol %	2·15	1·92	2·70	2·56	2·66	1·99	2·80	2·63	2·82	2·68	1·84	2·78	2·59	2·98	3·02	2·62	2·94	2·87	2·95	3·48	2·55
Moisture %	51·94	46·20	43·66	48·07	48·06	45·76	48·51	47·04	45·37	46·14	44·26	47·60	45·51	45·88	46·30	45·39	45·89	48·79	45·25	45·64	47·76
Juices																					
First Exp. °Brix ..	18·81	18·93	17·92	19·16	19·45	18·63	19·37	19·77	20·58	20·11	18·47	19·19	19·66	19·35	18·26	19·59	19·77	19·49	18·37	18·11	19·08
Pol % ..	15·44	16·20	15·36	16·35	16·42	15·84	16·50	17·29	18·43	17·66	15·33	16·33	17·03	16·94	15·91	17·20	17·52	16·82	15·30	15·62	16·30
App. Purity ..	82·11	85·58	85·71	85·33	84·42	85·02	85·18	87·46	89·55	87·82	83·00	85·12	86·62	87·55	87·13	87·80	88·62	86·30	83·29	86·25	85·41
Absolute °Brix ..	17·56	17·59	17·10	18·26	18·63	17·43	17·61	18·16	19·38	18·61	17·06	17·78	18·58	17·89	17·29	18·11	18·80	18·17	17·59	16·84	17·92
App. Purity ..	80·08	83·39	83·31	83·41	82·33	83·02	83·70	85·41	87·25	84·95	79·92	82·96	84·77	85·52	84·73	85·53	86·12	83·65	81·02	84·14	82·98
Mixed °Brix ..	16·85	15·89	15·33	16·00	17·15	15·18	15·91	16·61	17·32	16·64	15·56	15·96	16·32	16·56	15·00	15·85	17·23	15·89	15·71	15·07	16·22
App. Purity ..	80·36	83·67	83·81	83·88	82·74	83·33	84·10	85·70	87·64	85·52	80·61	83·39	85·17	85·93	85·13	85·80	86·54	84·02	81·22	84·17	83·38
R.S. Ratio ..	8·18	8·07	7·94	6·86	6·69	6·62	8·59	5·52	4·61	4·58	8·32	7·29	7·12	7·66	8·24	6·15	—	4·91	—	8·16	7·18
Last Exp. °Brix ..	4·35	3·05	5·32	4·72	4·76	4·20	5·38	4·52	5·00	5·04	4·30	4·95	3·79	7·45	5·75	3·94	5·79	6·31	9·73	7·46	—
App. Purity ..	74·39	77·41	77·07	75·85	76·70	76·45	78·81	79·97	80·00	76·68	69·53	77·64	77·86	80·54	80·00	80·20	79·86	78·92	78·24	80·44	—
Evaporator Supply																					
°Brix ..	16·34	16·24	14·78	15·94	16·96	14·99	15·44	16·80	17·44	16·98	15·29	16·04	16·40	16·58	14·83	16·13	16·24	16·05	15·12	15·61	—
App. Purity ..	81·83	84·05	84·71	84·19	83·84	83·36	84·47	86·47	88·07	85·99	80·76	84·04	85·83	86·03	85·91	86·67	86·60	85·61	81·20	85·20	—
Syrup °Brix ..	57·87	59·99	57·41	57·63	62·99	64·12	56·42	59·40	62·40	61·53	56·25	65·47	68·19	54·32	59·28	58·26	60·22	65·46	57·35	56·20	—
App. Purity ..	80·31	83·85	85·37	85·32	83·50	83·51	84·23	86·96	88·87	86·82	82·15	84·81	86·38	86·25	85·87	87·37	87·51	86·30	82·04	85·74	—
Filter Cake Pol % ..	1·68	4·43	4·49	1·30	2·52	2·09	2·32	2·52	4·28	3·06	1·80	1·10	1·49	4·08	2·83	1·74	3·12	1·35	4·29	5·85	2·06
Moisture % ..	77·54	71·75	—	77·51	76·30	76·56	72·54	69·73	60·05	67·51	53·47	76·24	79·45	77·56	71·43	75·66	71·52	74·28	62·16	—	74·76
Sugars																					
(Export) Pol % ..	97·97	—	—	96·87	97·74	97·38	97·09	97·64	97·11	97·25	97·21	97·33	97·70	97·08	—	97·08	98·18	97·47	96·91	—	—
(All) Pol %	98·27	96·70	97·58	96·86	97·82	97·68	97·33	97·67	97·43	97·25	96·88	97·33	97·96	96·97	97·12	97·09	98·17	97·46	96·78	97·58	97·50
(Export) Moisture % ..	0·58	—	—	0·82	0·55	—	0·86	0·96	0·99	0·80	0·87	0·65	0·84	0·96	—	0·84	0·88	—	0·84	—	—
(All) Moisture % ..	0·49	0·87	0·94	0·82	—	—	0·86	0·96	0·96	0·80	0·99	0·65	—	—	0·64	0·83	0·88	—	0·82	0·64	—
Final Molasses																					
°Brix	92·64	86·38	87·73	91·20	91·38	90·88	88·72	88·08	93·86	88·00	88·50	88·87	89·58	87·22	85·65	85·04	86·24	91·76	86·14	84·71	90·18
App. Purity	34·90	33·10	32·06	30·54	33·39	33·47	38·03	31·64	34·53	35·67	31·37	31·96	30·49	34·85	31·28	33·40	31·91	37·92	34·50	30·20	33·15

TABLE V

Factory Control Data

	Mony-musk	Rich-mond/ Llan-dovery	Jamaica Sugar Estates	Frome	New Yar-mouth	Cay-manas	Inns-wood	Bar-nett	Worthy Park	Rose Hall	Gray's Inn Central	Sevens	By-brook	Serge Island	Vale Royal	Apple-ton	Hamp-den	Ber-nard Lodge	Holland	Long Pond	Totals and Averages
Control Classification																					
Cane																					
Fibre/Pol Ratio	1·01	1·14	1·29	1·02	1·15	1·07	1·19	1·01	0·89	1·09	1·56	1·23	1·05	1·18	1·16	0·95	1·12	1·16	1·14	1·21	1·10
Tons Cane/Ton 96° Sugar ..	9·29	8·86	9·31	8·39	8·86	8·88	9·32	8·25	7·57	8·31	10·16	9·14	8·23	8·98	8·98	8·53	8·24	8·87	9·51	9·47	8·86
Demarara Index	21·60	21·42	21·35	21·57	21·90	21·42	21·86	21·65	22·27	21·79	21·40	21·65	21·74	21·94	21·50	22·04	21·95	21·79	21·76	21·56	21·64
Java Ratio	79·73	77·53	78·39	80·61	79·42	79·17	76·00	77·50	79·76	76·33	73·32	76·48	79·33	76·51	78·69	78·55	78·25	76·81	80·07	77·40	78·40
Milling																					
Tons Cane/Hour	159·12	31·11	70·33	178·42	63·27	41·28	39·22	30·46	31·80	26·08	52·92	67·19	46·87	36·62	33·26	39·06	54·47	76·67	17·33	27·61	61·40
Tons Fibre/Hour	19·79	4·47	10·92	23·97	9·50	5·51	5·87	4·14	4·16	3·84	9·31	10·32	6·66	5·59	4·82	4·88	8·35	11·49	2·43	4·04	8·66
Imbibition % Cane	14·08	18·40	16·91	20·62	17·07	21·58	18·36	16·44	17·66	18·43	17·86	18·69	19·81	15·07	20·29	19·46	16·31	21·47	17·17	16·24	17·87
Imbibition % Fibre	113·18	128·19	108·89	153·48	113·75	161·66	122·74	121·03	135·13	125·13	101·54	121·69	139·38	98·72	139·86	151·99	106·44	143·24	122·43	111·00	126·78
Pol Extraction	95·18	95·72	93·40	94·61	93·67	95·77	93·02	94·64	95·09	94·19	94·58	92·99	94·68	93·04	93·00	95·17	93·47	92·99	93·38	91·60	94·24
Reduced Pol Extraction ..	95·15	96·35	94·87	95·04	94·88	96·08	94·33	95·13	95·33	95·20	96·37	94·48	95·42	94·48	94·11	95·30	94·85	94·32	94·20	93·00	94·99
Absolute Juice Lost % Fibre ..	33·93	25·55	35·90	34·71	35·84	27·45	39·68	34·11	32·66	33·63	25·39	38·63	32·09	38·62	41·24	32·90	36·06	39·75	40·60	49·01	35·09
Bagasse % Cane	27·54	27·97	29·40	27·65	31·02	26·64	31·22	27·84	25·57	29·24	33·13	31·47	27·78	30·29	29·06	24·96	30·94	31·52	27·51	29·25	28·83
Time Grinding % Gross G.T. ..	84·63	69·86	67·83	88·77	81·24	77·18	79·31	80·55	86·30	79·19	71·63	72·44	85·14	61·51	77·02	76·78	77·37	83·91	58·10	80·20	76·93
Purity Drop																					
First Expressed—Mixed ..	1·75	1·91	1·90	1·45	1·68	1·69	1·08	1·76	1·91	2·30	2·39	1·73	1·45	1·62	2·00	2·00	2·08	2·28	2·07	1·78	2·03
First Expressed—Last Expressed	7·72	8.17	8·64	9·48	7·72	8·57	6·37	7·49	9·55	11·14	13·47	7·48	8·76	7·01	7·13	7·60	8·76	7·38	5·05	5·81	—
Boiling House																					
Tons Brix/Hour..	23·19	4·47	9·43	26·53	9·34	5·95	5·44	4·51	5·07	3·87	6·98	9·35	7·04	5·14	1·55	5·71	7·80	10·96	2·44	3·62	8·87
Tons 96° Sugar/Hour	17·12	3·51	7·55	21·25	7·15	1·65	4·21	3·69	4·20	3·11	5·21	7·34	5·70	4·08	3·70	1·17	6·40	8·64	1·82	2·92	6·93
Filter Cake % Cane	3·56	1·58	1·51	2·28	2·23	2·78	1·42	1·91	1·69	1·71	2·85	2·89	2·98	2·55	1·88	1·77	3·32	2·14	1·38	1·08	2·51
Gallons Final Molasses at 88° Brix/Ton 96° Sugar	58·29	44·24	43·00	44·08	44·09	43·05	46·15	36·11	27·15	33·70	57·88	46·39	38·75	40·25	38·38	44·96	43·24	36·31	45·83	40·80	45·70
Efficiency (W.C.)	97·74	97·70	99·34	99·32	96·88	97·80	95·58	98·35	96·10	97·66	98·33	98·24	98·02	94·86	98·73	93·86	97·11	97·46	97·26	98·78	97·78
Purity Rise: Mixed—Syrup ..	0·05	0·18	1·56	1·44	0·76	0·18	0·13	1·26	1·23	1·30	1·54	1·42	1·21	0·82	0·74	1·57	0·97	2·28	0·82	1·27	—
Pol Balance (In Cane)																					
% in Sugars	83·93	86·23	85·63	86·78	83·18	86·23	82·18	86·86	86·23	85·76	84·08	83·95	86·34	82·47	85·39		85·01	83·74	82·42	83·84	84·82
% in Molasses	10·26	7·56	7·09	7·01	7·35	7·46	8·95	5·96	5·18	6·18	9·19	7·51	6·23	6·87	6·14	See	7·04	6·93	7·71	6·19	7·64
% in Filter Cake	0·47	0·56	0·56	0·21	0·43	0·46	0·26	0·36	0·49	0·39	0·46	0·25	0·33	0·80	0·43	foot-	0·77	0·26	0·48	0·52	0·40
% in Bagasse	4·82	4·28	6·60	5·39	6·33	4·23	6·98	5·36	4·91	5·81	5·42	7·01	5·32	6·96	7·00	note	6·53	7·01	6·62	8·40	5·75
Undetermined	0·52	1·37	0·12	0·61	2·71	1·62	1·63	1·46	3·19	1·86	0·85	1·28	1·78	2·90	1·04		0·65	2·06	2·77	1·05	1·39

Appleton's Pol Balance to read:— % in Sugars .. .. 83·35; % in "C" Molasses .. 4·72; % in "B" Molasses .. 4·17; % in Syrup .. .. 0·66; % in Filter Cake .. 0·24; % in Cloudy Juice 0·20; % in Bagasse .. 4·83; Undetermined .. 1·83

TABLE VI

NON-FACTORY STOPPAGES AND TIME GRINDING % GROSS GRINDING TIME

Factories	Field stoppages	Premeditated	Labour	Week-end	Nett grinding time	Time grinding
Monymusk	6·94	2·06	—	4·78	86·22	84·63
Richmond/Llandovery	4·34	—	2·11	9·03	84·52	69·86
Jamaica Sugar Estates	15·21	2·72	2·22	7·27	72·58	67·83
Frome	0·80	6·19	—	3·09	89·92	88·77
New Yarmouth	5·75	1·16	2·25*	7·07	83·77	81·24
Caymanas	2·48	3·48	3·59	4·58	85·87	77·18
Innswood	1·28	2·64	0·83	8·18	87·07	79·31
Barnett	1·07	4·92	—	7·73	86·28	80·55
Worthy Park	0·61	0·94	—	5·62	92·83	86·30
Rose Hall	0·87	0·67	2·37	7·52	88·57	79·19
Gray's Inn Central	12·41	1·34	—	8·92	77·33	71·63
Sevens	8·94	1·14	—	7·65	82·27	72·44
Bybrook	0·79	0·80	—	7·09	91·32	85·14
Serge Island	4·11	0·53	—	10·01	85·35	61·51
Vale Royal	0·91	1·62	—	9·47	88·00	77·02
Appleton	1·81	2·23	3·58	7·93	84·45	76·78
Hampden	6·61	1·81	—	5·80	85·78	77·37
Bernard Lodge	4·53	1·74	—	6·06	87·67	83·91
Holland	12·65	1·70	14·43	5·04	66·18	58·10
Long Pond	1·48	1·64	—	8·93	87·95	80·20
Island Averages	5·09	2·00	1·57†	6·75	84·59	76·93

NOTE.—*Gross Grinding Time = Interval between commencement and termination of milling.
Nett Grinding Time = Possible Grinding Time.
Time Grinding = Actual Grinding Time.
Rain.
† 0·14% rain.

TABLE VII

FACTORY STOPPAGES AND TIME GRINDING % NETT GRINDING TIME

Factories	Machinery	Chokes	Juice room	Steam	Electrical	Washing	Other reasons	Time grinding
Monymusk	1·83	0·02	—	—	—	—	—	98·15
Richmond/Llandovery	11·96	0·64	0·79	3·63	—	—	0·33	82·65
Jamaica Sugar Estates	3·21	0·77	—	2·55	—	—	—	93·47
Frome	0·95	0·04	0·07	0·07	0·08	—	0·07	98·72
New Yarmouth	2·41	0·08	—	—	0·50	—	0·04	96·97
Caymanas	7·95	0·53	0·52	0·36	0·29	—	0·47	89·88
Innswood	5·84	0·37	1·74	0·33	—	—	0·63	91·09
Barnett	4·69	1·26	0·33	0·08	—	—	0·28	93·36
Worthy Park	3·76	0·26	1·33	0·61	—	—	1·07	92·97
Rose Hall	8·80	0·78	0·23	0·16	—	—	0·62	89·41
Gray's Inn Central	2·74	0·45	1·75	0·38	—	—	2·04	92·64
Sevens	7·72	0·63	0·10	1·25	—	—	2·25	88·05
Bybrook	5·60	0·30	—	0·39	—	—	0·48	93·23
Serge Island	13·85	0·14	2·33	2·96	—	—	8·65	72·07
Vale Royal	8·74	1·52	0·51	0·32	—	—	1·38	87·53
Appleton	5·55	0·93	0·33	1·85	—	—	0·43	90·91
Hampden	3·21	1·50	2·94	0·72	—	—	1·44	90·19
Bernard Lodge	3·81	—	—	—	—	—	0·49	95·70
Holland	7·99	0·49	0·85	2·03	—	—	0·85	87·79
Long Pond	7·43	0·39	0·24	0·46	—	—	0·29	91·19
Island Averages	5·81	0·54	0·70	0·83	0·05	—	1·13	90·94

SUMMARY

Time Grinding	52449·07 Hours	
Factory Stoppages	5223·40 ,,	= 7·66% Gross Grinding Time.
Nett Grinding Time	57672·47 ,,	
Non-Factory Stoppages	10503·33 ,,	= 15·41% Gross Grinding Time.
Gross Grinding Time	68176·20 ,,	

DISTILLERY DATA—1956 CROP

TABLE I

Distillery Capacities

		Mony-musk	Richmond/Llandovery	Jamaica Sugar Estates	Frome	New Yarmouth	Caymanas	Innswood	Barnett	Worthy Park	Rose Hall	Gray's Inn Central	Sevens	Bybrook	Serge Island	Vale Royal	Appleton	Hampden	Bernard Lodge	Holland	Long Pond	Totals and Averages
Fermentation																						
Vats	No. off	30		10	43	37	15	30	17	10	13	9	21	15	10	20		56	44	13	90	483
Total Capacity	gal.	362,000		125,000	171,800	61,500	75,000	71,943	36,000	20,000	39,000	90,000	35,546	42,600	70,000	34,230		98,000	132,000	11,700	174,000	1,650,319
Dunder Boxes	No. off	4		6	7	5	2	4	10	5	12	—	5	4	3	8		5	12	3	13	108
Total Capacity	gal.	12,000		65,000	19,600	5,500	42,400	10,000	10,000	9,000	14,400	—	18,233	8,000	10,000	8,800		10,000	36,000	2,500	12,000	293,433
Cooling Surface	sq. ft.	—		150	—	—	—	—	—	—	—	—	957	—	—	—		840	—	—	—	1,947
Distillation																						
Wash Preheater	No. 1																					
Capacity	gal.	2,200*		—	3,800	4,000	3,000	—	Tubular	1,500	—	Cont.	—	—	—	850		—	3,000	—	—	18,350
	sq. ft. H.S.	135		—	166	—	100	—	—	—	—	330	—	—	—	40		—	250	—	—	1,021
	No. 2																					
Capacity	gal.	2,200		—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	2,200
	sq. ft. H.S.	135		—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	135
Still No. 1																						
Loading Capacity	gal.	2,000		2,500	1,200	1,500	1,500	2,500	1,800	1,300	1,500	—	1,780	1,237	1,500	1,500		2,000	1,380	1,000	1,200	27,397
	sq. ft. H.S.	135		104	72	150	105	—	200	65	100	—	188	98	200	80		—	112	—	—	1,609
L.W. retort charge	gal.	250		350	150	180	175	300	220	150	180	—	230	140	175	100		250	168	120	120	3,258
	sq. ft. H.S.	—		4·2	—	—	3·6	—	—	—	—	—	—	—	—	—		—	—	—	—	7·80
H.W. retort charge	gal.	200		240	120	150	150	250	180	120	120	—	190	120	140	64		200	140	100	100	2,584
	sq. ft. H.S.	—		—	—	—	3·6	—	—	—	—	—	—	—	—	—		—	—	—	—	3·6
Condenser	sq. ft. C.S.	—		766	—	—	—	—	470	—	—	—	355	752	220	—		—	—	—	—	2,563
Still No. 2																						
Loading Capacity	gal.	2,000		2,500	2,000	1,500	1,500	—	—	—	1,500	—	1,780	1,237	3,500	1,500		1,500	1,380	—	800	22,697
	sq. ft. H.S.	135		104	120	150	105	—	—	—	95	—	136	98	98	80		—	112	—	—	1,233
L.W. retort charge	gal.	250		350	240	180	175	—	—	—	180	—	230	140	350	100		200	168	—	100	2,663
	sq. ft. H.S.	—		4·2	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	4·2
H.W. retort charge	gal.	200		240	220	150	150	—	—	—	120	—	190	120	280	64		150	140	—	80	2,104
	sq. ft. H.S.	—		—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Condenser	sq. ft. C.S.	—		766	—	—	—	—	—	—	—	—	351	752	185	—		—	—	—	—	2,054
Still No. 3																						
Loading Capacity	gal.	2,000		2,500	1,800	1,200	—	—	—	—	—	—	—	—	—	—		1,500	1,380	—	1,500	11,880
	sq. ft. H.S.	135		104	86	115	—	—	—	—	—	—	—	—	—	—		—	112	—	—	552
L.W. retort charge	gal.	250		350	240	140	—	—	—	—	—	—	—	—	—	—		200	168	—	150	1,498
	sq. ft. H.S.	—		4·2	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	4·2
H.W. retort charge	gal.	200		240	220	120	—	—	—	—	—	—	—	—	—	—		150	140	—	180	1,250
	sq. ft. H.S.	—		—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Condenser	sq. ft. C.S.	—		766	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	766
Still No. 4																						
Loading Capacity	gal.	2,000		—	1,800	1,500	—	—	—	—	—	—	—	—	—	—		1,000	1,500	—	—	7,800
	sq. ft. H.S.	135		—	88	150	—	—	—	—	—	—	—	—	—	—		—	125	—	—	498
L.W. retort charge	gal.	250		—	240	180	—	—	—	—	—	—	—	—	—	—		150	180	—	—	1,000
	sq. ft. H.S.	—		—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
H.W. retort charge	gal.	200		—	220	150	—	—	—	—	—	—	—	—	—	—		80	150	—	—	800
	sq. ft. H.S.	—		—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Condenser	sq. ft. C.S.	—		—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Still No. 5																						
Loading Capacity	gal.	—		—	2,000	—	—	—	—	—	—	—	—	—	—	—		—	2,000	—	—	4,000
	sq. ft. H.S.	—		—	120	—	—	—	—	—	—	—	—	—	—	—		—	150	—	—	270
L.W. retort charge	gal.	—		—	240	—	—	—	—	—	—	—	—	—	—	—		—	250	—	—	490
	sq. ft. H.S.	—		—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
H.W. retort charge	gal.	—		—	220	—	—	—	—	—	—	—	—	—	—	—		—	200	—	—	420
	sq. ft. H.S.	—		—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Condenser	sq. ft. C.S.	—		—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Still No. 6																						
Loading Capacity	gal.	—		—	2,000	—	—	—	—	—	—	—	—	—	—	—		—	2,000	—	—	4,000
	sq. ft. H.S.	—		—	120	—	—	—	—	—	—	—	—	—	—	—		—	150	—	—	270
L.W. retort charge	gal.	—		—	240	—	—	—	—	—	—	—	—	—	—	—		—	250	—	—	490
	sq. ft. H.S.	—		—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
H.W. retort charge	gal.	—		—	220	—	—	—	—	—	—	—	—	—	—	—		—	200	—	—	420
	sq. ft. H.S.	—		—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Condenser	sq. ft. C.S.	—		—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Continuous Still																						
No. of columns		2		—	2	—	1	2	—	—	—	1	—	—	—	—		—	—	—	—	8
Wash/24 hours	gal.	48,000		—	5,000	—	40,000	25,000	—	—	—	40,000	—	—	—	—		—	—	—	—	158,000

Not Available

Not Available

* Five each.

TABLE II

Distillery Quantities

		Mony-musk Pot Still	Richmond Llandovery	Frome	New Yarmouth	Innswood	Barnett	Worthy Park	Rose Hall	Gray's Inn Central	Bybrook	Serge Island	Vale Royal	Hampden	Bernard Lodge	Holland	Long Pond	Mony-musk Col. Still
Cane Juice Used	tons	267	—	247	—	—	—	—	—	—	—	—	189	3,727	—	—	5,532	—
	gal.	56,000	—	51,800	—	—	—	—	—	—	—	—	39,625	780,042	—	—	1,157,723	—
Total Sugars as R.S.	lb.	92,670	—	85,792	—	—	—	—	—	—	—	—	60,869	—	—	—	1,789,637	—
Molasses Used	tons	2,857	1,378	3,954	1,261	2,888	—	1,160	1,221	1,947	126	1,052	1,550	3,322	4,117	268	1,797	595
	gal.	—	211,910	594,850	189,474	449,252	—	172,055	186,908	293,656	192,405	178,270	230,445	522,768	617,725	41,229	278,315	—
Equivalent 88° Brix	gal.	461,976	206,951	624,916	199,933	405,471	87,000	176,977	188,480	297,866	192,405	175,907	229,906	507,099	652,493	40,358	265,027	96,366
Total Sugars as R.S.	lb.	—	1,792,649	5,316,259	1,616,250	367,258	735,878	—	1,458,767	2,901,141	1,487,248	—	2,040,343	—	5,318,965	—	2,295,776	—
Total Sugars used as R.S.	lb.	3,803,386	1,792,649	5,402,052	1,616,250	2,428,175	735,878	—	1,458,767	2,506,883	1,487,248	1,481,280	2,101,212	—	5,318,965	—	4,085,413	790,406
Wash: Set	gal.	3,214,000	1,547,875	4,092,600	1,224,000	3,170,564	587,800	—	108,000	2,394,684	994,000	1,241,500	1,546,500	3,216,200	4,419,450	212,400	2,382,750	690,000
Distilled	gal.	3,100,000	1,522,500	3,756,400	1,180,000	2,759,290	522,500	—	991,200	2,064,084	991,898	1,096,500	—	3,187,700	4,320,710	198,800	2,382,750	676,000
Rum as Distilled																		
Bulk	gal.	172,330	58,259	234,213	84,303	114,592	—	47,872	45,866	—	53,356	51,833	67,076	130,576	203,268	6,004	125,031	31,687
Proof	gal.	239,883	85,641	327,898	118,024	175,417	43,978	64,232	67,243	—	79,767	76,503	102,232	219,840	300,837	9,066	185,015	44,108
As Packaged Bulk	gal.	196,799	59,505	230,660	81,491	118,924	31,362	—	47,364	—	55,671	—	69,820	145,239	201,050	6,112	128,518	—
Alcohol as Distilled																		
Bulk	gal.	—	—	—	—	—	—	—	—	101,468	—	—	—	—	—	—	—	—
As Packaged Bulk	gal.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
As Distilled Proof	gal.	—	—	—	—	—	—	—	—	170,166	—	—	—	—	—	—	—	—
Absolute Alcohol	gal.	—	—	—	—	—	—	—	—	97,102	45,516	—	—	—	—	—	—	—
Anhydrous Alcohol	gal.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

TABLE III

Distillery Analytical and Control Data

	Monymusk Pot Still	Frome	New Yarmouth	Innswood	Gray's Inn Central	Bybrook	Serge Island	Bernard Lodge	Long Pond	Monymusk Col. Still
Cane Juice										
Total Sugars as R.S. %	15·48	15·53	—	—	—	—	—	—	14·44	—
°Brix	16·88	16·32	—	—	—	—	—	—	15·16	—
Molasses										
Total Sugars as R.S. %	57·98	60·02	57·35	56·69	57·88	52·69	57·42	57·68	57·05	—
°Brix	93·28	91·10	91·10	83·99	88·93	89·58	87·22	91·45	84·86	93·43
Dunder										
°Brix	11·59	12·09	13·08	8·34	—	11·86	13·89	14·26	19·34	8·93
% Acidity (as Acetic)	1·35	2·84	—	0·66	—	1·39	1·38	1·53	2·67	1·29
pH	—	—	3·97	—						
Live Wash										
°Brix	18·06	18·12	18·06	15·66	17·38	17·93	17·92	17·68	20·37	17·32
Total Sugars as R.S. %	11·02	12·29	11·22	12·51	11·34	11·59	10·86	11·21	11·48	10·70
% Acidity (as Acetic)	0·56	0·87	—	0·76		0·32	0·36	0·50	1·38	0·60
pH	—	—	4·85	—						
Dead Wash										
°Brix	9·19	7·56	8·07	6·94	7·69	7·41	9·60	8·47	10·94	8·00
Total Sugars as R.S. %	0·77	0·81	1·09	0·88	0·59	0·96	1·02	1·19	1·11	0·88
% Acidity (as Acetic)	1·38	1·67	—	0·93	—	0·76	—	1·01	2·19	1·32
pH	—	—	4·04	—	—					
% Proof Spirit	8·11	10·14	10·09	6·36	8·67		7·71	7·91	9·13	—
Rum										
Overproof	—	—	40·00	53·08	67·70*	49·50	47·60	48·00	48·00	—
Fermentation										
Attenuation °Brix	8·87	10·56	9·99	8·72	9·69	10·52	8·32	9·21	9·13	9·32
% Conversion	93·01	93·41	90·29	92·96	94·80	91·72	—	90·99	90·33	91·78
Lbs. R.S./gal. Abs. Alc. in Wash	25·59	22·81	23·78	29·04	24·55	29·92	30·72	26·66	32·94	29·27
Distillation										
Gals. Abs. Alc. in Dist./gal. Abs. Alc. in Wash	0·95	0·86	0·99	0·82	0·95	0·92	0·91	0·88	0·85	0·95
Overall										
Lbs. R.S./gal. Abs. Alc. in Dist.	27·80	28·87	24·00	36·67	25·82	32·68	33·93	30·98	38·69	31·12
Recovery % Theoretical	55·32	53·79	61·08	41·94	59·57	47·06	45·32	49·64	39·75	18·95
Lbs. R.S./gal. Proof Alc. in Dist.	15·86	16·47	13·69	20·94	14·73	18·64	19·36	17·68	22·08	17·92
Gals. Mol. at 88° Brix/gal. Proof Alc.	1·93	1·91	1·69	2·31	1·75	2·41	2·30	2·17	1·43	2·18

* Alcohol

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